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Paper No. 111

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

_____

JOHN A. EWEN

Junior Party,

v.

VOLKER DOLLE, JURGEN ROHRMANN, ANDREAS WINTER,
MARTIN ANTBERG and ROBERT KLEIN

Senior Party.

_____

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_____

Before SCHAFER, GRON, and LEE, Administrative Patent Judges.

GRON, Administrative Patent Judge.

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FINAL DECISION

Introduction and Summary of the Issues

Dolle is Senior Party to this interference because Dolle
has been accorded benefit of the May 20, 1989, foreign filing
date of Federal Republic of Germany Application P 3916553.1
for substitute Count 2, to which Claims 4-6, 8 and 12-37 of
Dolle Application 08/147,006, filed November 1, 1993,
correspond.

Ewen is Junior Party to this interference because Ewen has
been denied benefit of a filing date earlier than the October
10, 1989, filing date of U.S. Application 07/419,221, now U.S.
Patent 5,036,034, patented July 30, 1991, for substitute Count
2, to which Claims 1-8 of U.S. Patent 5,036,034 and Claims 1-
28 of Reissue Application 08/489,800, filed June 12, 1995,
correspond.

The following contentions are presented at final hearing:

A.   Ewen contends that Claims 4-6, 8, 12-37 of Dolle
Application 08/147,006, filed November 1, 1993, are
unpatentable under 35 U.S.C. § 102 over, and/or under 35
U.S.C. § 103 in view of, Ewen et al., U.S. Patent 4,892,851,
issued January 9, 1990, or Ewen et al., "Syndiotactic

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Polypropylene Polynerizations with Group IVB Metallocenes,"
JACS, Vol. 110, No. 18, pp. 6255-6256 (1988)(Opening Brief At
Final Hearing For Party Ewen (Paper

No. 95), p. 14).

    B.   Ewen contends that Claims 4-6, 8, 12-26, 28 and 30-
37 of Dolle Application 08/147,006 are unpatentable under 35
U.S.C. § 112, second paragraph (vague and indefinite), and 35
U.S.C.
§ 112, first paragraph (enablement requirement)(Opening Brief
At Final Hearing For Party Ewen (Paper No. 95), p. 14).

    C.   Ewen contends that the Administrative Patent Judge
(APJ) erred in denying Ewen benefit of the July 15, 1988,
filing date of Ewen et al., U.S. Application 07/220,007, now
U.S. Patent 4,892,851, issued January 9, 1990, for substitute
Count 2 (Opening Brief At Final Hearing For Party Ewen (Paper
No. 95),
p. 14).

    D.   Dolle contends that the APJ erred in holding
Claims 27-30 of Dolle Application 08/147,006, filed November
1, 1993, unpatentable under 35 U.S.C. § 103 in view of Ewen et
al., U.S. Patent 4,892,851, issued January 9, 1990 (Opening

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Brief at Final Hearing for Senior Party Winter (Paper No. 96),
p. 1).

E.   Dolle contends that Claims 1-8 of Ewen U.S. Patent

5,036,034, patented July 30, 1991, and Claims 1-28 of Ewen

Reissue Application 08/489,800, filed June 12, 1995, are

unpatentable under 35 U.S.C. § 103 in view of Ewen et al.,

U.S. 4,892,851, issued January 9, 1990 (Opening Brief at Final

Hearing for Senior Party Winter (Paper No. 96), p. 2).

F.   Dolle contends that Ewen may not rely on Ewen

Exhibits X, Y and Z in support of its motions for judgment

under 37 CFR 1.633(a)(Opening Brief at Final Hearing for

Senior Party Winter (Paper No. 96), p. 2).

Our discussion of the issues and consideration of the

relevant evidence presented at final hearing shall proceed in

the following order:

1.   <u>Background</u>

2.   <u>Claim interpretation</u>

   A.   <u>Undisputed terms and phrases</u>

   B.   <u>Disputed terms and phrases</u>

3.   <u>Ewen's contentions</u>

   A.   Patentability of Dolle Claims 4-6, 8,
        <u>and 12-37 under 35 U.S.C. § 102 or 103</u>

   B.   Patentability of Dolle Claims 4-6, 8, 12-26, 28

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       and 30-37 under 35 U.S.C. § 112, 1st and 2nd
para.

       C.   Ewen's Motion for Benefit of the July 15,
            1988, filing date of Application 07/220,007,
            now U.S. Patent 4,892,851

   4.   Dolle's contentions

Discussion

1.   Background

   A.   July 15, 1988 -- John A. Ewen and Abbas Razavi
(hereafter Ewen et al.) filed U.S. Application 07/220,007,
entitled "Process and Catalyst for Producing Syndiotactic
Polyolefins."

   B.   May 20, 1989 -- Hoechst Aktiengesellschaft filed
Application P 3916553.1, entitled "Syndio-Isoblockpolymer und
Verfahren zu seiner Herstellung," in the Federal Republic of
Germany.

   C.   October 10, 1989 -- John A. Ewen (hereafter Ewen)
filed U.S. Application 07/419,221, entitled "Catalyst for
Producing Hemiisotactic Polypropylene."

   D.   January 9, 1990 -- U.S. Patent 4,892,851 issued from
Ewen et al. Application 07/220,007 filed July 15, 1988.

   E.   May 17, 1990 -- Volker Dolle, Jurgen Rohrmann,
Andreas Winter, Martin Antberg and Robert Klein (hereafter
Dolle) filed U.S. Application 07/525,096, entitled "Syndio-

<div align="center">5</div>

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Isoblock Polymer and Process for its Preparation," claiming

benefit under 35 U.S.C. § 119 of the May 20, 1989, foreign

filing date of Application P 3916553.1 in the Federal Republic

of Germany.

    F.   July 30, 1991 -- U.S. Patent 5,036,034 issued from

Ewen Application 07/419,221 filed October 10, 1989.

    G.   August 10, 1992 -- Dolle filed divisional U.S.

Application 07/927,869, claiming (1) benefit under 35 U.S.C.

§ 121 of the May 17, 1990, filing date of U.S. Application

07/525,096 and (2) benefit under 35 U.S.C. § 119 of the May

20, 1989, filing date of Application P 3916553.1 in the

Federal Republic of Germany.

    H.   November 1, 1993 -- Dolle filed continuing U.S.

Application 08/147,006, claiming (1) benefit under 35 U.S.C.

§ 120 of the August 10, 1992, filing date of U.S. Application

07/927,869; (2) benefit under 35 U.S.C. § 121 of the May 17,

1990, filing date of U.S. Application 07/525,096; and (3)

benefit under 35 U.S.C. § 119 of the May 20, 1989, foreign

filing date of Application P 3916553.1 in the Federal Republic

of Germany.

    I.   February 14, 1995 -- The Board mailed Notice

Declaring Interference 103,482 (Paper No. 1) between Ewen's

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U.S. Patent 5,036,034, issued from Application 07/419,221,

filed October 10, 1989, and Dolle's Application 08/147,006,

filed November 1, 1993 for the subject matter defined by Count

1 (Count 1 is reproduced in attached Appendix A). Claims 1-8

of Ewen's U.S. Patent 5,036,034 and Claims 4-6, 8, and 12-26

of Dolle's Application 08/147,006 were designated as

corresponding to Count 1. Having been accorded (1) benefit of

the August 10, 1992, filing date

of U.S. continuing Application 07/927,869; (2) benefit of the

May 17, 1990, filing date of U.S. divisional Application

07/525,096; and (3) benefit of the May 20, 1989, filing date

of Federal Republic of Germany Application P3916553.1 for

Count 1, Dolle was named Senior Party.

J.   May 10, 1995 -- Ewen filed Ewen Motion For Judgment

No. 1 Under 37 CFR § 1.633(a)(Paper No. 18). Ewen argued that

the subject matter of Dolle's claims corresponding to Count 1

is unpatentable: (1) under 35 U.S.C. § 102 over, and/or under

35 U.S.C. § 103 in view of, the teaching of either U.S. Patent

4,892,851, which issued from Ewen et al. Application

07/220,007 filed July 15, 1988, or Ewen et al.,

"Syndiospecific Propylene Polymerizations with Group 4

Metallocenes," Journal of the American Chemical Society, Vol.

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110, pp. 6255-56 (1988); and   (2) under 35 U.S.C. § 112,

first and second paragraphs, with express derision for the

recitation in Dolle's Claim 4 of

"a syndio-isoblock polymer having molecular chains in which

syndiotactic and isotactic sequences are present and the

sequence length is 3 to 50 monomer units" (Paper No. 18, pp.

17-21).[1]

     K.   May 11, 1995 -- Dolle filed Dolle Motion For

Judgment Pursuant To 37 CFR § 1.633(a)(Paper No. 14). Dolle

argued that (1) Claims 1-3 and 5-7 of Ewen's U.S. 5,036,034,

issued from Application 07/419,221 filed October 10, 1989, are

unpatentable under 35 U.S.C. § 103 in view of the teaching of

Miya et al. (Miya), U.S. Patent 4,931,417, issued June 5,

1990, from an application filed November 2, 1988; (2) Claims

1-3 of Ewen's

U.S. 5,036,034, are unpatentable under 35 U.S.C. § 102 as

described by Klouras et al. (Klouras), "Ringsubstituierte (1)

Titanocenophanes," Monatsheste fur Chemie, Vol. 112, pp. 887-

897 (1981); (3) Claims 1-3 and 5-7 of Ewen's U.S. 5,036,034

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     [1]   Ewen also urged that a number of Dolle's claims were
unpatentable under 35 U.S.C. § 112, fourth paragraph, as
improperly dependent on claims which were either canceled or drawn
to subject matter of narrower scope (Paper No. 18, p. 21).

are unpatentable under 35 U.S.C. § 103 in view of the combined

teachings of Miya and Klouras; and (4) Claims 1-3 and 5-7 of

Ewen's U.S. 5,036,034 are unpatentable under 35 U.S.C. § 112,

second paragraph, as indefinite in defining R" as "a

structural bridge imparting stereorigidity to the compound"

(Paper No. 14, p. 1).

    L.   May 11, 1995 -- Dolle filed a § 1.633(c) Motion To

Redefine Interfering Subject Matter (Paper No. 15). Dolle

moved pursuant to 37 CFR § 1.633(c)(1) to substitute Proposed

Count 2 or, in the alternative, Proposed Count 3 for original

Count 1

of the interference (Paper No. 15, p. 1 and attachments

thereto).

Dolle also moved pursuant to 37 CFR § 1.633(c)(2) to enter its

amendment to Claims 4, 16, 19 and 23 of Application

08/147,006, filed November 1, 1993, enter Claims 27-30

therein, and designate Claims 27-30 as corresponding to

original Count 1 or proposed Count 2 or 3 (Paper No. 15, p. 1

and attachments thereto).

    M.   May 11, 1995 -- Dolle filed a § 1.633(f) Motion

(Paper No. 13). Dolle moved to be accorded (1) benefit of the

August 10, 1992, filing date of U.S. continuing Application

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07/927,869; (2) benefit of the May 17, 1990, filing date of

U.S. divisional Application 07/525,096; and (3) benefit of the

May 20, 1989, filing date of Federal Republic of Germany

Application P3916553.1 for the subject matter of Count 2 or 3

as proposed in Dolle's § 1.633(c) Motion To Redefine

Interfering Subject Matter (Paper No. 15).

    N.   June 12, 1995 -- Ewen filed Application 08/489,800

for Reissue of U.S. Patent 5,036,034, originally issued from

U.S. Application 07/419,221, filed October 10, 1989. In

Reissue Application 08/489,800, Ewen adds Claims 9-28 and

claims benefit under 35 U.S.C. § 120 of the July 15, 1988,

filing date of Ewen et al. Application 07/220,007, which

issued January 9, 1990, as U.S. Patent 4,892,851, for the full

scope of the subject matter claimed in Reissue Application

08/489,800.

    O.   June 12, 1995 -- Ewen filed Ewen Responsive Motion

No. 2 To Redefine Under 37 CFR § 1.633(c) and (i)(Paper No.

20). Ewen moves to redefine the interfering subject matter by

substituting proposed Counts 4 and 5 for original Count 1

(Paper No. 20, p. 2).

    P.   June 12, 1995 -- Ewen filed Ewen Responsive Motion

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No. 3 To Add Reissue; 37 CFR § 1.633(h)(i)(Paper No. 21).

Ewen moves to add Reissue Application 08/489,800 to this

interference (Paper No. 21, p. 2).

Q.   June 12, 1995 -- Ewen filed Ewen Responsive Motion

No. 4 Under 37 CFR § 1.633(f)(j) and 35 USC 120 (Paper No.

22).

Ewen moves to be accorded benefit of the July 15, 1988, filing

date of U.S. Application 07/220,007 which issued as U.S.

Patent 4,892,851 on January 9, 1990, for subject matter of

Count 1 or proposed Counts 4 and 5 (Paper No. 22, p. 2).

R.   June 12, 1995 -- Dolle filed Dolle Motion For

Amending Claims No. 2 Under § 1.633 (Paper No. 23). Dolle

moves under   37 CFR § 1.633(c) and (i) to amend Claim 8 of

U.S. Application 08/147,006 filed November 1, 1993, and to

designate Claim 8 as amended as corresponding to original

Count 1 or Dolle's proposed Count 2 or 3 (Paper No. 23, p. 1).

S.   June 12, 1995 -- Dolle filed Dolle Motion For

Priority No. 2 Under § 1.633(f)(Paper No. 24). Dolle moves to

be accorded benefit of (1) the August 10, 1992, filing date of

U.S. Application 07/927,869; (2) the May 17, 1990, filing date

of U.S. Application 07/525,096; and (3) the May 20, 1989,

filing date of P 3916553.1 in the Federal Republic of Germany

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for the subject matter of Count 1 or proposed Count 2 or 3, to

which Claim 8, amended as proposed in Dolle Motion For

Amending Claims No. 2 Under § 1.633 (Paper No. 23), is said to

correspond (Paper

No. 24, p. 1).

    T.   July 28, 1995 -- Dolle filed Dolle § 1.635 Motion To

Correct Obvious Error (Paper No. 42). Dolle moves to correct

an inadvertent omission from proposed Counts 2 and 3 of

Dolle's

§ 1.633(c) Motion To Redefine Interfering Subject Matter

(Paper No. 15)(Paper No. 42, p. 1).

    U.   November 2, 1995 -- Ewen filed Ewen Motion To

Strike, 37 CFR § 1.635 Or Reply, 37 CFR § 1.638 (Paper No.

47). Ewen moves to strike Dolle's reply (Paper No. 46) to

Ewen Supplemental Submission To Ewen Responsive Motion No. 3

(Paper No. 45) or to consider Ewen's reply to Dolle's reply

(Paper No. 47, p. 2).

    V.   June 30, 1998 -- An Administrative Patent Judge

(APJ) entered a Decision On Dolle Motion For Judgment Pursuant

To

37 CFR § 1.633(a)(Paper 14)(Paper No. 52). Preliminarily, the

APJ found that the full scope of the subject matter claimed in

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Ewen's U.S. Patent 5,036,034, i.e., "[a] metallocene compound

used to make a catalyst to produce hemiisotactic olefin

polymers" (Claim 1) and "[a] metallocene catalyst to produce

hemiisotactic olefin polymers" (Claim 5), is not described in

U.S. Application 07/220,007, issued January 9, 1990, as U.S.

Patent 4,892,851, and therefore, held the subject matter

claimed in Ewen's U.S. Patent 5,036,034, is not entitled under

35 U.S.C. § 120 to the benefit of the July 15, 1988, filing

date of U.S. Application 07/220,007 (Paper No. 52, p. 9,

footnote 3):

> Ewen is not entitled to the filing date of
application
> 07/220,007 under 35 U.S.C. § 120. In order to be
entitled
> to the benefit of an earlier application the subject
matter
> of the claims of Ewen 034 and the claims of Ewen reissue
> application 08/489,800 must be described in the earlier
> application. Application 07/220,007 does not describe
> hemiisotactic polymers or metallocene compounds which
lack
> bilateral symmetry. While such compounds might be
obvious
> from the 07/220,007 disclosure, entitlement to an earlier
> filing date does not extend to subject matter which is
> not described but would be obvious. Lockwood v. American
> Airlines, 107 F.3d 1565, 1571-72, 41 USPQ 1961, 1966
> (Fed. Cir. 1997).

The APJ held that Dolle had not sustained its burden to

establish that Claims 1-3 and 5-7 of Ewen's U.S. 5,036,034

filed October 10, 1989, are unpatentable under 35 U.S.C. § 103

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in view of the teaching of Miya, U.S. 4,931,417 (attached

hereto as Appendix B), issued June 5, 1990, from Application

07/266,065, filed November 2, 1988 (Paper No. 52, p. 12, l. 7-

8). After holding that "Miya . . . is prior art under 35

U.S.C. § 102(e)" (Paper No. 52, p. 9, last para.), the APJ

found, *inter alia* (Paper No. 52, pp. 7-9):

> 44. Miya expressly describes a number of metallocene
>   compounds . . . some of which fall within the generic
>   formula set out in Ewen 034's claims 1-3 and 5-8 and
>   lack bilateral symmetry. . . .
>
>   . . . . .
>
> 46. Miya discloses the use of an ionizing agent along with
>   the metallocene compound, including methylaluminoxane,
>   in carrying out polymerizations. . . .
>
> 47. Miya teaches that the compounds are useful as a
>   catalyst for "stereoregular-olefin polymerization."
>   Miya, col. 1, lines 10-12.
>
> 48. Miya's Examples 7, 9, 15, 17, and 21 describe
>   polymerizations using metallocene compounds which lack
>   bilateral symmetry and are covered by the general
>   formula of claims 1-3 and 5-7 of Ewen 034.
>
> 49. Miya's examples 7, 9, 15, 17 and 21 demonstrate
>   polymerizations which result in the formation of
>   isotactic polymers.
>
> 50. Miya does not describe the formation of hemiisotactic
>   polymers.
>
> 51. Because of the lack of description of hemiisotactic

polymers, Miya does not anticipate the subject matter
of Ewen's claims 1 to 3 and 5 to 7.

52.   The difference between the compounds described by Miya
and those claimed in claims 1-3 and 5-7 of Ewen 034 is
that Miya does not teach the formation of hemiisotactic
polymers.

53.   Miya does not suggest and provides no basis for
inferring that any of the metallocene compounds
disclosed in the patent, including those covered
by Ewen's general formula, could or would make
hemiisotactic compounds [sic, polymers].

The APJ noted (Paper No. 52, p. 10, first full para.):

Ewen urges that the formation of hemiisotactic polymers is a
claim limitation and a difference distinguishing the claimed
compounds from those described by Miya. Ewen Opposition
No. 1 to Dolle Motion for Judgment (Paper 29), p. 3.

Consistent therewith, the APJ found (Paper No. 52, p. 11,

first full para.; emphasis added; footnote omitted):

A review of the Ewen 034 specification indicates that
the language "to produce hemiisotactic olefin polymers" is
a necessary limiting property of the metallocene compounds
which serves to distinguish the claimed compounds from other
cyclopentadienyl compounds which fall within the general
formula set out in the Ewen 034 claims. Ewen notes that
no special polymerization conditions are necessary to form
hemiisotactic polymers using these compounds and that any

<u>of the conventional means of polymerization will give a</u>
<u>hemiisotactic structure</u>. Ewen 034, col. 5, lines 65-68.
Ewen also notes that the "new catalyst produces a structure
of polypropylene termed hemiisotactic...." Ewen 034,
col. 9, lines 26-28. In view of this disclosure, the phrase
"to produce hemiisotactic olefin polymers" limits the claim
coverage to compounds which necessarily form hemiisotactic
polymers. <u>Compounds that meet the general formula and form</u>
<u>hemiisotactic as well as isotactic or other polymer forms</u>
<u>are, in my view, outside the scope of the claims</u>.

The APJ did not consider Klouras, because the reference

submitted was not written entirely in English (Paper No. 52,

p. 2, second full para.). Finally, with regard to the

unpatentability of Claims 1-3 and 5-7 under 35 U.S.C. § 112,

second paragraph, the APJ indicated that "Dolle . . . failed

to satisfy the burden of showing that Ewen's claims 1-3 and

4[sic, 5]-7 are indefinite" (Paper No. 52, p. 13, second

para.).

W.   June 30, 1998 -- The APJ entered Sua Sponte Decision

On Patentability Of Dolle's Claims 4, 6-8, 12-26 And Proposed

Claims 27-30 (Paper No. 53). The APJ held that Claims 4, 6-8,

and 12-26 then pending in Dolle's Application 08/147,006,

filed November 1, 1993, and proposed Claims 27-30 of Dolle's §

1.633(c) Motion To Redefine Interfering Subject Matter (Paper

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No. 15), filed May 11, 1995, are unpatentable under 35 U.S.C.

§ 112, second paragraph, because the phrase "a 1-olefin of the

formula RCH=CHR' in which R and R' are identical or different

and are an alkyl radical having 1 to 14 carbon atoms" in

independent Claim 4 is indefinite (Paper No. 53, p. 2).

    X.   June 30, 1998 -- The APJ entered Decision On Dolle's

§ 1.633(c) Motion To Redefine Interfering Subject Matter

(Paper 15)(Paper No. 54). The APJ (1) denied Dolle's motion

to substitute proposed Count 2 (Paper No. 54, p. 2); (2)

granted Dolle's motion to substitute proposed Count 3 (Paper

No. 54,

pp. 2-3, bridging para.); (3) granted Dolle's motion to amend

Claims 4, 16, 19 and 23 (Paper No. 54, pp. 3-5); and (4)

granted Dolle's motion to enter new Claims 27-30[2] which were

designated as corresponding to the substitute count (Paper No.

54, p. 5, last para.). However, the APJ held new Claims 27-30

to be unpatentable under 35 U.S.C. § 103 in view of the

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    [2]   Claims 27-30 are directed to "[a] metallocene
comprising a compound of the formula I" (Paper No. 54, pp. 6-7,
Claim 27), "[a] metallocene catalyst comprising of a metallocene
and an aluminoxane, wherein the metallocene is a compound of the
formula I" (Paper No. 54, pp. 7-8, Claim 28), "[t]he metallocene
as claimed in claim 27" (Paper No. 54, p. 8, Claim 29), and "[t]he
catalyst as claimed in claim 28" (Paper No. 54, p. 8, Claim 30).

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teaching of Ewen et al., U.S. Patent 4,892,851 (Paper No. 54, pp. 8-13).

   Y.   June 30, 1998 -- The APJ entered Decision On Ewen Responsive Motion No. 3 To Add Reissue; 37 CFR § 1.633(h)(i) (Paper 21)(Paper No. 55). The APJ granted Ewen's motion to add Reissue Application 08/489,800, filed June 12, 1995, to this interference. The effect of the decision is:

        1.   Ewen, via Reissue Application 08/489,800, filed June 12, 1995, claims benefit of the July 15, 1988, filing date of Application 07/220,007.

        2.   Reissue Application 08/489,800 amends Claim 1 of U.S. 5,036,034, to read "[a] metallocene compound <u>useful</u> [used] to make a catalyst <u>effective</u> to produce hemiisotactic olefin polymers."

        3.   Reissue Application 08/489,800 presents new Claims 9-28.

   Z.   June 30, 1998 -- The APJ entered Decision On Ewen Responsive Motion No. 2 To Redefine Under 37 CFR § 1.633(c) And (i)(Paper 20)(Paper No. 56). The APJ dismissed Ewen's motion to substitute proposed Counts 4 and 5 for original Count 1, having denied the earlier Dolle Motion For Judgment Pursuant To 37 CFR

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§ 1.633(a)(Paper 14) in his June 30, 1998, Decision On Dolle

Motion For Judgment Pursuant To 37 CFR § 1.633(a)(Paper

14)(Paper No. 52). A decision granting Dolle Motion For

Judgment Pursuant To 37 CFR § 1.633(a)(Paper 14) that the

subject matter of   Claims 1-3 and 5-8 of U.S. Patent

5,036,034, which corresponds

to original Count 1, is unpatentable under 35 U.S.C. § 103, is

a condition precedent to Ewen Responsive Motion No. 2 To

Redefine Under 37 CFR § 1.633(c) And (i)(Paper 20)(Paper No.

56, p. 2).

AA. June 30, 1998 -- The APJ entered Decision On Dolle

§ 1.633(f) Motion (Paper 13)(Paper No. 57). The APJ granted

Dolle's motion to be accorded benefit of the August 10, 1992,

filing date of U.S. Application 07/927,869; the May 17, 1990,

filing date of U.S. Application 07/525,096; and the May 20,

1989, filing date of Fed. Rep. Germany Application P3916553.1

for substitute Count 2 (Paper No. 57, p. 2). After concluding

that "[b]enefit of an earlier application for purposes of

priority requires only that an embodiment within the scope of

the count be described in the earlier copending application.

Weil v. Fritz, 572 F.2d 856, 865-66 n. 16, 196 USPQ 600, 608

n. 16 (CCPA 1978)," the APJ found (Paper No. 57, p. 3):

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      The polymerization of propylene with a catalyst
falling within the scope of count 2 is described in
examples 3 through 12 in each of Dolle's U.S.
applications
and the German application. Accordingly, Dolle is
entitled
to the benefit of the earlier applications as to count 2.

      BB. June 30, 1998 -- The APJ ordered Redeclaration Of

Interference (Paper No. 58). New Count 2 (Paper No. 58, pp.

2-4) was substituted for original Count 1. New Count 2 in-

part[3] reads:

Count 2

      A metallocene compound used to make a catalyst
to produce (1) hemiisotactic olefin polymers or
(2) syndio-isoblock polymers having molecular chains
in which syndiotactic and isotactic sequences are
present and the sequence length is 3 to 50 monomer
units comprising the general formula:

$$R''(CpR_n)(CpR'_m)MHal_2$$

where Cp is cyclopentadienyl or a substituted
cyclopentadienyl, each R and R' is a hydrocarbyl radical
having from 1-20 carbon atoms and is the same or
different
and is selected such that CpR'_m is a sterically different
ring from CpR_n resulting in a lack of bi-lateral symmetry
for the compound, R'' is a structural bridge imparting
stereorigidity to the compound, M is a Group 3, Group 4,
Group 5 or Group 6 metal, n is from 0 to 4, m is from 0
to 4 and Hal is a halogen;

or

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    [3]   Count 2 is reproduced in its entirety in Appendix C of
this decision.

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a metallocene catalyst comprising:

    a) a metallocene compound; and
    b) an ionizing agent;

wherein the metallocene compound comprises the general
formula:

$$R''(CpR_n)(CpR'_m)MHal_2$$

where Cp is cyclopentadienyl or a substituted
cyclopentadienyl, each R and R' is a hydrocarbyl radical
having from 1-20 carbon atoms and is the same or
different
and is selected such that CpR'_m is a sterically different
ring from CpR_n resulting in a lack of bi-lateral symmetry
for the compound, R'' is a structural bridge imparting
stereorigidity to the compound, M is a Group 3, Group 4,
Group 5 or Group 6 metal, n is from 0 to 4, m is from 0
to 4 and Hal is a halogen and wherein the ionizing agent
converts a neutral metallocene compound to a metallocene
cation which operates as a catalyst to produce
(1) hemiisotactic olefin polymers or (2) syndio-isoblock
polymer having molecular chains in which syndiotactic and
isotactic sequences are present and the sequence length
is 3 to 50 monomer units;

or

a process, for the preparation of (1) a syndio-isoblock
polymer having molecular chains in which syndiotactic and
isotactic sequences are present and the sequence length
is
3 to 50 monomer units or (2) hemiisotactic olefin
polymers,
comprising polymerization of propylene or a 1-olefin of
the formula RCH=CHR' in which R and R' are identical or
different and are hydrogen or an alkyl radical having 1
to 14 carbon atoms or R and R' combine with the carbon
atoms joining them together to for[sic, form] a ring at a
temperature of -60 to 100°C, a pressure of 0.5 to 100 bar,
in solution, in suspension or in the gas phase, in the
presence of a catalyst composed of a metallocene and an
aluminoxane, wherein the metallocene is a . . . [compound

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of the formula

$$R^9(FluorR_n)(CpR'_m)MR^1R^2$$
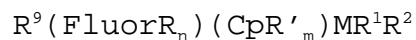
where

Cp is cyclopentadienyl which may be substituted at the
2 and/or 3 positions, Fluor is fluorenyl (a substituted
cyclopentadienyl) which may be substituted at the 2, 3,
4 and/or 5 positions, each R and R' may be hydrogen or a
hydrocarbyl substituent having from 1-20 carbon atoms and
is the same or different, R^9 may be a structural bridge
imparting stereorigidity to the compound, M may be
titanium,
zirconium, hafnium, vanadium, niobium or tantalum, n is
from 0 to 4, m is from 0 to 2 and each R^1 and R^2 may be
halogen, with the proviso that at least one of the R and
R' substituents is not hydrogen].

The APJ further indicated that Claims 1-8 of Ewen's U.S.

Patent 5,036,034, Claims 1-28 of Ewen's Reissue Application

08/489,800, and Claims 4-6, 8, and 12-30 of Dolle's

Application 08/147,006, all the claims pending in the

respective applications, correspond to Count 2 (Paper No. 58,

p. 5).

CC. June 30, 1998 - The APJ entered Decisions On Dolle

Motion For Amending Claims No. 2 Under § 1.633(f)(Papers 23

and 24)(Paper No. 59). The APJ denied entry of the proposed

amendment to dependent Claim 8 because the amendment was

unnecessary (Paper No. 59, p. 2, last full para.). The motion

to be accorded benefit of the earlier filing dates of U.S.

Applications 07/927,869 and 07/525,096 and Fed. Rep. Germany

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Application P3916553.1 for the subject matter of amended Claim

8 was dismissed as moot (Paper No. 59, pp. 2-3).

DD. June 30, 1998 -- The APJ entered Decision On Ewen

Motion For Judgment No. 1 Under 37 C.F.R. § 1.633(a)(Paper

No. 18)(Paper No. 60). The APJ denied Ewen's motion for

judgment that the subject matter of Dolle's claims is

unpatentable

(1) under 35 U.S.C. § 102 over, and/or under 35 U.S.C. § 103

in view of, the teaching of either U.S. Patent 4,892,851,

which issued from Ewen et al. Application 07/220,007 filed

July 15, 1988, or Ewen et al., "Syndiospecific Propylene

Polymerizations with Group 4 Metallocenes," Journal of the

American Chemical Society, Vol. 110, pp. 6255-56

(1988)(hereafter Ewen JACS), and/or (2) under 35 U.S.C. § 112,

first, second, and fourth paragraphs.

The APJ found (Paper No. 60, p. 8):

A central issue with respect to Ewen's motion on
patentability over the prior art and under the first
and second paragraphs of § 112, is the construction to
be given to the phrase "sequence length" as used in
Dolle's claims and specification.

The APJ construed the phrase "sequence length" in Dolle's

claimed "process for the preparation of a syndio-isoblock

polymer having molecular chains in which syndiotactic and

isotactic sequences are present and the sequence length is 3

to 50 monomer units" (Dolle Application 08/147,006; Claim 4)

"to refer to the average length of the sequences of the

polymers" (Paper No. 60, p.9, first para.). In support of his

claim interpretation, the APJ carefully considered the

teaching in the specification. He noted specifically the

specification's examples of polymer formation using

metallocene catalysts (Paper No. 60, p. 9, second para.):

> The examples report various properties of the polymers,
> including the sequence lengths, n_{iso} and n_{syn}. Dolle defines
> n_{iso} and n_{syn} as follows:
>
> > n_{iso} = average length of isotactic sequences
> > n_{syn} = average length of syndiotactic sequences.
>
> Dolle specification, p. 13, lines 15-16. The reported
> values for n_{iso} and n_{syn} in the examples range from 3.5-4.0
> and 3.3 to 4.5, respectively. These values are not
> inconsistent with the sequence length of 3 to 50 monomer
> units set out in the claims. Thus, the specification
> supports the view that "sequence length" as used in the
> claims refers to the average isotactic and syndiotactic
> sequence length.

He also noted (Paper No. 60, last full para.) Dr. Winter's

declaration (Dolle Exhibit 7) at pages 1-2 that while:

> "isotactic sequence" stands for sequences like mmmm, mmmr,
> rmmr, mmrr or mmrm in a polymer chain . . . [, t]he term
> "sequence length" however has a completely different meaning
> and is well known from the literature. The isotactic
> sequence length and the syndiotactic sequence length

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> are average values and can be derived by statistical/
> mathematical calculations....

The APJ indicated that the singular form of the term "sequence

length" is customary for and consistent with an average

sequence length (Paper No. 60, p. 10, first full sentence).

According

to the APJ, the Declarations of Drs. Atwood and Scott do not

expressly contradict Dr. Winter's declaration (Paper No. 60,

first full para.).

The APJ held that dependent Claim 8 is properly construed

to include all the limitations of the claims upon which it

depends. Accordingly, he denied the motion for judgment that

Dolle's

Claim 8 is unpatentable under 35 U.S.C. § 112, fourth

paragraph (Paper No. 60, p. 11, first five lines).

The APJ held that Ewen had not met his burden to

establish the unpatentability of Claims 4-6, 8 and 12-26 under

35 U.S.C.

§ 112, first and second paragraphs (Paper No. 60, p. 11,

second full para.), because he had not explained why the claim

language does not satisfy the requirements thereof. Ewen

relies on the declarations of Drs. Scott and Atwood in support

of the motions. The APJ (1) found that "[i]t is only

necessary to determine the average sequence length through
conventional means known in the art" (Paper No. 60, p. 12,
second full para.); (2) found that "Ewen has not asserted that
one having ordinary skill in the art would not be able to
determine the average length of the syndiotactic and isotactic
sequences of polymers made according to the process set out in
Dolle's claims" (Paper No. 60, p. 12, second full para.); and
(3) concluded that "the specification preferably omits . . .
that which is well known in the art" (Paper No. 60, p. 12,
second full para.).

Finally, the APJ denied Ewen's motion for judgment of
unpatentability under 35 U.S.C. § 102 or 103 over U.S. Patent
4,892,851 or Ewen JACS because (Paper No. 60, p. 13):

> Neither reference describes or suggests a process for
> forming polymers where the average sequence length for
> both the syndiotactic and isotactic sequences is at
> least 3 and no more than 50. The fact that some triad
> or even pentad meso sequences are present in the
> syndiotactic polymers described by the references is
> an insufficient basis to find that the average sequence
> length for both types of sequence [sic] falls in the
> range of 3 to 50 monomers.

EE. June 30, 1998 -- The APJ entered Decision On Ewen
Responsive Motion No. 4 Under 37 CFR § 1.633(f),(j) And 35
U.S.C. 120 (Paper 22)(Paper No. 61). The APJ denied Ewen's
motion to be accorded benefit of the July 15, 1988, filing

date of Application 07/220,007, which issued as U.S. Patent

4,892,851, for the subject matter of proposed Counts 4 and 5

(Paper No. 61, p. 2, first full para.), because he dismissed

Ewen's motion to substitute proposed Counts 4 and 5 for

original Count 1 in Ewen Responsive Motion No. 2 To Redefine

Under 37 CFR § 1.633(c) And (i)(Paper 20)(Paper No. 56).

However, because the APJ redeclared the interference

substituting new Count 2 for original Count 1 (Paper No. 58),

he evaluated Ewen's motion to be accorded benefit of the July

15, 1988, filing date of Application 07/220,007 as for the

subject matter of substitute Count 2 (Paper No. 61, p. 2,

first full para.).

The APJ cited (Paper No. 61, p. 2, second full para.)

Hyatt v. Boone, 146 F.3d 1348, 1352, 47 USPQ2d 1128, 1130

(Fed. Cir. 1998)(footnotes omitted):

> When a party to an interference seeks the benefit of
> an earlier-filed United States patent application,
> the earlier application must meet the requirements of
> 35 U.S.C. § 120 and 35 U.S.C. § 112[, para. 1,] . . . for
> the subject matter of the count. The earlier application
> must contain a written description of the subject matter
> of the interference count, and must meet the enablement
> requirement. Fiers v. Revel, 984 F.2d 1164, 1170, 25
> USPQ2d
> 1601, 1606 (Fed. Cir. 1993)(section 112 paragraph 1 must
> be
> met by the earlier application).

Then he found that Ewen Application 07/220,007 does provide a

written description of an embodiment encompassed by Count 2

because (Paper No. 61, pp. 2-3, bridging para.):

> . . . [Application 07/220,007] does not describe
> (1) the formation of either syndio-isoblock polymer
> having molecular chains in which syndiotactic and
> isotactic sequences are present and the sequence
> length is 3 to 50 monomer units or hemiisotactic
> olefin polymer or (2) a metallocene compound meeting
> the requisites of the count.

In response to Ewen's argument that Application

07/220,007 describes syndiotactic polymers having isotactic

meso (mm) triad "mistakes" three monomers in length,

purportedly isotactic sequences with a sequence length of 3

monomer units, the APJ ruled that the term "sequence length"

refers to "average sequence length" as used in Dolle's claims

corresponding to the count (Paper No. 61, p. 3, first two

para.). The APJ found (Paper

No. 61, p. 3, second full para.), "As shown by the Winter

Declaration (Dolle Ex. 7)[,] the average lengths of the

isotactic sequences in the Ewen 851 examples were less than 3

and thus outside the range of 3 to 50 monomers. Dolle Ex. 7,

p. 4)".

The APJ was not persuaded by Ewen's argument that generic

teaching of suitable metallocenes in Application 07/220,007,

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encompassing metallocenes defined by a structural formula of

Count 2, describes the specific subject matter of Count 2 in

the manner required by the first paragraph of 35 U.S.C. § 112.

Therefore, the APJ denied Ewen benefit of the filing date of

Application 07/220,007 (Paper No. 61, pp. 3-4, bridging

para.), citing Lockwood v. American Airlines, Inc., 107 F.3d

1565, 1571-72, 41 USPQ2d 1961, 1966 (Fed. Cir. 1997):

> Entitlement to a filing date does not extend to subject
> matter which is not disclosed, but would be obvious over
> what is expressly disclosed. It extends only to that
> which is disclosed. While the meaning of the terms,
> phrases, or diagrams in a disclosure is to be explained
> or interpreted from the vantage point of one skilled
> in the art, all the limitations must appear in the
> specification. The question is not whether a claimed
>   invention is an obvious variant of that which is
> disclosed   in the specification. Rather, a prior
> application itself   must describe an invention, and do so
> in sufficient detail
>   that one skilled in the art can clearly conclude that
>   the inventor invented the claimed invention as of the
>   filing date sought.

FF. July 15, 1998 -- Dolle filed a §1.633(c)(2) Motion

To Redefine Interfering Subject Matter (Paper No. 64). Dolle

moved (1) to amend Claims 4, 16 and 19 (Appendix D) of

Application 08/147,006, purportedly to correct a typographical

error, and

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(2) to add new Claims 31-37 (Appendix D) in response to Sua

Sponte Decision On Patentability Of Dolle's Claims 4, 6-8, 12-

26 And Proposed Claims 27-30 [(Appendix E)](Paper No. 53).

GG. July 31, 1998 -- The APJ entered Decision On

Reconsideration (Paper No. 68) on Ewen's Request For

Reconsideration Or, Alternatively, Clarification Under 37 CFR

1.640(c)(Paper No. 62) of Decision On Ewen Motion For Judgment

No. 1 Under 37 C.F.R. § 1.633(a)(Paper 18)(Paper No. 60).

Ewen asked the APJ to clarify the meaning, and alter his

interpretation, of the phrase "sequence length" in Dolle's

claims. In response, the APJ stated (Paper No. 68, p. 2,

first para.):

> . . . I construed "sequence length" as used in the phrase
> "a syndio-isoblock polymer having molecular chains in which
> syndiotactic and isotactic sequences are present and the
> sequence length is 3 to 50 monomer units...." to mean the
> average length of the isotactic and syndiotactic sequences
> of the polymers. By this I meant that the average length
> of the isotactic and the syndiotactic chains must each be
> within the range 3 to 50 monomer units. . . . In my view,
> the person having ordinary skill in the art considering
> Dolle's specification as a whole would conclude that the
> "sequence length" of 3 to 50 monomer units referred to in
> the claims was the n_{syn} and n_{iso} defined in the specification
> and reported in the examples.

The APJ indicated that his prior interpretation was supported

by the uncontradicted Winter declaration that the phrase

"sequence length" has a well known meaning in the art and refers to

average values that can be derived by statistical/mathematical calculations. The APJ saw no reason to change his prior interpretation (Paper No. 68, pp. 2-3, bridging para.).

The APJ again cited the prior art teaching in Randall, James C. (Randall), "Carbon-13 Nuclear Magnetic Resonance Quantitative Measurements of Average Sequence Lengths of Like Stereochemical Additions in Polypropylene and Polystyrene," Journal of Polymer Science, Polymer Physics Edition, Vol. 14, (1976)(Dolle Ex. No. 6 (DE 6)), specifically at page 2086, that "[f]or a sequence length measurement, an average number of repeating units is desired that describes the typical run of like stereochemical configurations terminated by opposite configurations at the opposite end" as support for the interpretation that the term "sequence length" in Dolle's claims refers to an average number of repeating units (Paper No. 68, p. 3, second para.). On reconsideration of all the evidence, the APJ found that the greater weight supported his interpretation (Paper No. 68, p. 3, second para., last sentence).

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    HH.   September 15, 1998 -- The APJ entered Decision on

Dolle § 1.633(c)(2) Motion to Redefine Interfering Subject

Matter (Paper 64)(Paper No. 77).   The APJ held that proposed

amended Claims 4, 16 and 19 and proposed new Claims 31-37 are

directed to the same patentable invention as, and correspond

to, Count 2.   Therefore, the APJ granted Dolle's motion to

amend Claims 4, 16 and 19 of, and add new Claims 31-37 to,

Application 07/147,006 (Paper No. 77, p. 2, second para.).

The APJ held that amended Claims 4, 16 and 19 and new Claims

31-37 are not ambiguous and determined that neither the

amended nor new claims are directed to new matter (Paper No.

77, p. 3, first and second full para.).

    The APJ restated his view that new Claims 31-37

significantly differ from Claims 27-30 which were held to be

unpatentable in view of the teaching in Ewen et al., U.S.

Patent 4,892,851, in his Decision On Ewen Motion For Judgment

No. 1

Under 37 C.F.R. § 1.633(a)(Paper 18)(Paper No. 60).   Because

new

Claims 31-37 include "the limitation that polymers made using

the metallocenes have 'molecular chains in which syndiotactic

and isotactic sequences are present and the sequence length is

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3 to 50 monomer units...", neither Ewen 851 nor Ewen JACS

discloses, or would have reasonably suggested, the subject

matter of

Dolle's new claims (Paper No. 77, p. 4, second para.). The

APJ repeated his Decision On Ewen Motion For Judgment No. 1

Under   37 C.F.R. § 1.633(a)(Paper 18)(Paper No. 60) and

Decision On Reconsideration (Paper No. 68) that the phrase

"'sequence length' refers to the average sequence length of

the syndiotactic and isotactic sequences in the polymer and

that the phrase is not indefinite" (Paper No. 77, pp. 4-5,

bridging para.).

     With regard to Ewen urging that amended Claims 4, 16 and

19 and new Claims 31-37 are directed to subject matter which

is neither supported nor enabled by the disclosure in Dolle

Application 08/147,006 as drawn to compounds, catalysts,

and/or processes for polymerizing olefins which are not 1-

olefins,

the APJ stated (Paper No. 77, p. 5, first full para.):

     . . . Dolle's specification includes a written
description   of the polymerization of olefins which are not
1-olefins.
     Dole specification page 11, lines 28-32. This same
portion
     of Dolle's specification provides written descriptive
     support for the polymerization of ethylene when both R
and

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R' in the formula RCH=CHR' are hydrogen. The
specification
    also expressly mentions ethylene as an example of olefins
    which may be polymerized. Dolle specification, p. 11,
    lines 33-34. Absent evidence or reasoning providing a
    basis to doubt the objective truth of the statements in
    Dolle's specification, those statements must be taken
    as true and the disclosure enabling. . . . In re
Marzocchi,
    439 F.2d 220, 223, 169 USPQ 367, 369 (CCPA 1971) . . . .
    Ewen, however, has not presented any reasoning or
evidence
    which provides a basis for doubting the objective truth
    of the statements in Dolle's specification. Nor has Ewen
    provided reasoning or evidence indicating that Dolle's
    specification would not enable one having ordinary skill
    in the art to polymerize ethylene or olefins that are not
    1-olefins without undue experimentation.

    In response to Ewen's argument that new Claims 32-35

(Appendix D) are hybrid claims because they claim both a

product and a method in a single claim, the APJ, referring to

new

Claim 32, stated (Paper No. 77, pp. 6-7, bridging para.):

    Dolle's claim does not expressly combine two inventions
    into a single claim. Rather, Dolle's claimed invention
    is expressly directed to a metallocene compound. In my
    view, the language "used to make a catalyst to produce
    syndio-isoblock polymers . . ." serves to further limit
    the claimed metallocenes. . . . [T]he claim is similar
    to a product by process claim where the reference to the
    process may further characterize the product. To come
    within the scope of Dolle's claim 32, for example, the
    metallocene must not only meet formula I but must only
    "produce syndio-isoblock polymers having molecular chains
    in which syndiotactic and isotactic sequences are present
    and the sequence length is 3 to 50 monomer units by
    polymerization of an olefin" of the specified formula.
    Compounds which produce such polymers and also produce

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polymers that do not have the requisite average sequence
length due to the particular process conditions do not
meet
the express limitations of the claim. The construction
is consistent with Dolle's specification. See Dolle
Specification, p. 3, lines 5-12.

II. September 15, 1998 -- Redeclaration Of Interference

(Paper No. 78). The APJ redeclared the interference to

designate the claims of the parties which correspond to

substitute Count 2 (Appendix C) as follows (Paper No. 78, p.

2):

Claims of the parties

```
        Ewen    Patent 5,036,034      Claims 1-8
                Application 08/489,800  Claims 1-28
        Dolle   Application 08/147,006  Claims 4-6, 8, 12-37
```

Claims of the parties corresponding to count 2

```
        Ewen    Patent 5,036,034      Claims 1-8
                Application 08/489,800  Claims 1-28
        Dolle   Application 08/147,006  Claims 4, 5, 6, 8,
12-37
```

Claims of the parties not corresponding to count 2

```
        Ewen        None
        Dolle  None
```

JJ. October 15, 1998 -- Decision Returning Paper (Paper

No. 80). The APJ returned Ewen's Request for Reconsideration

(Paper 79) of Decision on Dolle § 1.633(c)(2) Motion to

Redefine Interfering Subject Matter (Paper 77), and the

declaration

of Dr. William J. Gauthier which accompanied the request, as unauthorized papers under 37 CFR § 1.618(a). The APJ found that Ewen's request for reconsideration was based, in substantial part, on the newly submitted declaration of Dr. Gauthier (Paper No. 80, pp. 1-2, bridging para., last sentence). Because 37 CFR § 1.639(a) provides that "proof of any material fact alleged in a motion . . . must be filed and served with the motion" and 37 CFR § 1.640(c) provides that the "request for reconsideration shall specify with particularity the points believed to have been misapprehended or overlooked in rendering the decision", the APJ returned Ewen's new evidence and the request for reconsideration based thereon as untimely and inappropriate. The APJ stated that he could not have misapprehended or otherwise overlooked evidence which is presented for the first time with a request for reconsideration of a decision on motion (Paper No. 80, p. 2, final para.).

KK. October 27, 1998 -- Ewen filed Ewen Motion Under 37 CFR § 1.635 For Entry Of Paper Returned Under 37 CFR § 1.618(a) Or, Alternatively, Request For Reconsideration Of Decision Returning Paper Under 37 CFR § 1.618(a)(Paper No. 82). Ewen argued that his Request for Reconsideration (Paper

No. 79) was timely filed because (1) the APJ presented a new

interpretation of the claim language in his decision on

Dolle's motion, (2) Dolle's motion generated "the

impossibility of homo-polymerizing ethylene to provide

isotactic or syndiotactic polymer structures", and

(3) the APJ newly decided that Dolle's claims are not directed

to compounds, catalysts, and processes for homopolymerizing

ethylene to provide isotactic or syndiotactic polymer

structures (Paper No. 82, pp. 2-3, bridging para.).

    LL. November 12, 1998 -- The APJ entered Decision On

Ewen Motion Under Motion Under 37 CFR § 1.635 For Entry Of

Paper Returned Under 37 CFR § 1.618(a) Or, Alternatively,

Request

For Reconsideration Of Decision Returning Paper Under 37 CFR

§ 1.618(a)(Paper 82)(Paper No. 83). The APJ dismissed the

motion as improper under 37 CFR § 1.635, considered the motion

as a request for reconsideration, and denied the request

(Paper No. 82, p. 2, second and third para.). First, the APJ

found that Ewen had ample opportunity to present evidence

regarding the correct interpretation of the phrase "sequence

length" in Dolle's claims (Paper No. 82, pp. 2-4). Second,

the APJ stated (Paper No. 82, p. 4, final para.):

Ewen's point 2, assumes that Ewen's claims 31 and 36 read on the homopolymerization of ethylene. However, express language of these claims excludes this interpretation. For example, claim 31 expressly requires the formation of "syndio-isoblock polymer having molecular chains in which syndiotactic and isotactic sequences are present and the sequence length is 3 to 50 monomer units...." This limitation excludes homopolymerization of ethylene which would have no syndiotactic or isotactic sequences. The claim, however, does not exclude using ethylene as a comonomer.

MM. December 9, 1998 -- Dolle filed Motion To Strike Under 37 CFR §1.635 (Paper No. 85) and Objections To Evidence (Paper No. 86). Dolle moved to strike, and objected to the admissibility of, the following evidence from Submission Of Ewen et al Evidence-In-Chief (Paper No. 84), filed November 20, 1998:

(1) Declaration of William J. Gauthier, dated September 28, 1998, including attachments A and B thereto (Ewen Exhibit X);

(2) Second Declaration of William J. Gauthier, dated November 19, 1998 (Ewen Exhibit Y), including Randall, James, POLYMER SEQUENCE DETERMINATION Carbon-13 NMR Method, New York, pp. 1-7 and 29-58 (1977)(Ewen Exhibit Z).

NN. June 30, 1999 -- Dolle filed Motion Under 37 CFR §1.635 To Suppress Evidence (Paper No. 98). Dolle objected to the admissibility, and moved to suppress, the following

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evidence from Opening Brief At Final Hearing For Party Ewen,

filed May 19, 1999 (Paper No. 95), and all statements which

rely on this evidence:

(1) Declaration of William J. Gauthier, dated

September 28, 1998, including attachments A and B thereto

(Ewen Exhibit X);

(2) Second Declaration of William J. Gauthier, dated

November 19, 1998 (Ewen Exhibit Y), including Randall, James,

POLYMER SEQUENCE DETERMINATION Carbon-13 NMR Method, New York,

pp. 1-7 and 29-58 (1977)(Ewen Exhibit Z).

2. Claim interpretation

It is essential to determine the metes and bounds of the

subject matter claimed before considering its patentability

under 35 U.S.C. §§ 101, 102, 103, and 112, first paragraph.

See In re Moore, 439 F.2d 1232, 1235, 169 USPQ 236, 238 (CCPA

1971)(claims first must be analyzed to determine exactly what

subject matter they encompass); In re Geerdes, 491 F.2d 1260,

1262, 180 USPQ 789, 791 (CCPA 1974)(whether the issue is

patentability under 35 U.S.C. § 103 or 112, first paragraph,

first decide what the claims include within their scope); In

re Steele, 305 F.2d 859, 862, 134 USPQ 292, 295 (CCPA 1992)(it

is wrong to analyze claimed subject matter based on

speculative assumptions as to the meaning of the claims).

Accordingly, we first define the terms and phrases used to

distinguish the subject matter claimed.

A.   Undisputed terms and phrases

The parties do not deny that the definitions of the

following terms and phrases would have been well understood by

persons skilled in the art as of the effective filing dates of

the respective Dolle and Ewen applications in which they

appear.

(1)   Olefin

An olefin is an "unsaturated hydrocarbon of the type

C_nH_{2n}, indicated by the suffix -ene . . . ." Hackh's Chemical

Dictionary, Fourth Edition, Grant, Julius, Ed., McGraw-Hill

Book Co., New York, p. 472 (1969). Examples are ethylene,

propylene, 1-butylene, 2-butylene, isobutylene, etc.

(2)   1-olefin

1-olefins are unsaturated hydrocarbons of the type C_nH_{2n}.

Each 1-olefin includes a terminal unsaturated bond, e.g.,

$H_2C=CH-(CH_2)_n-CH_3$, wherein n is an integer (1-alkylene).

2-olefins also are unsaturated hydrocarbons of the type C_nH_{2n}.

However, each 2-olefin includes an internal unsaturated bond,

e.g., $CH_3-HC=CH-(CH_2)_n-CH_3$, where n is an integer (2-alkylene).

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While ethyl*ene* ($H_2C=CH_2$), propyl*ene* ($H_2C=CH-CH_3$) and butyl*enes*

are all olefins, only alkylenes having four carbon atoms or

more can be a 1-olefin or a 2-olefin. Consequently, one

isomer of an unsaturated hydrocarbon of four or more carbon

atoms can only

be distinguished from another by indicating the position of

unsaturation, e.g., $H_2C=CH-CH_2-CH_3$ is 1-butylene; $CH_3-HC=CH-CH_3$

is 2-butylene. Propylene can only be 1-propylene.

(3) <u>Olefin polymer, polyolefin, or polyalkylene</u>

Olefins or alkylenes polymerize by addition at the

points of unsaturation, i.e., through the double bond, to form

saturated olefin polymers, polyolefins, or polyalkylenes.

Ethylene ($H_2C=CH_2$) produces polyethylene ($-CH_2-CH_2-CH_2-CH_2-CH_2-$

CH_2-CH_2-). Propylene $H_2C=CH-CH_3$ produces polypropylene; e.g.,

polypropylene comprising isotactic sequences including "meso"

dyads m having two successive methyl groups on the same side

of the polymer plane:

$$(-CH_2-CH_2-CH_2-CH_2-CH_2-) \quad \text{or} \quad \underline{}$$

```
        (-CH2-CH2-CH2-CH2-CH2-)    or    _____
              \          \                      \       \
               CH3       CH3
```
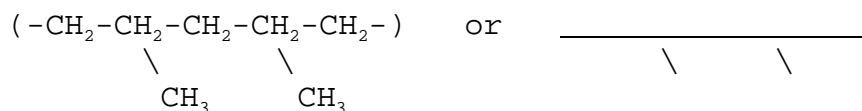
"meso" dyad m

or "meso" triads mm having three successive methyl groups on

the same side of the polymer plane:

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$(-CH_2-CH_2-CH_2-CH_2-CH_2-CH_2-CH_2-)$ or

```
             \         \         \                  \       \       \
            CH₃       CH₃       CH₃
```
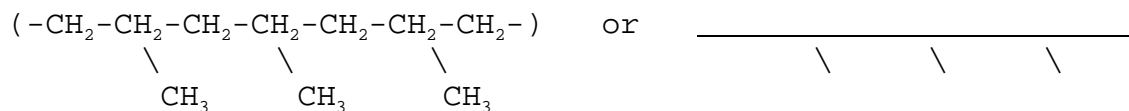
"meso" triad mm

See Opening Brief At Final Hearing For Party Ewen (Ewen Brief)
(Paper No. 95), pages 3-4, bridging para.. Similarly, 1-
olefins $(H_2C=CH-(CH_2)_n-CH_3)$ polymerize to polyolefins or
polyalkylenes, e.g., isotactic poly-1-olefins would include a
substantial amount of the following isotactic sequence:

$(-CH_2-CH_2-CH_2-CH_2-CH_2-CH_2-CH_2-)$ or

```
             \         \         \                  \       \       \
          (CH₂)ₙ   (CH₂)ₙ   (CH₂)ₙ
             \         \         \
            CH₃       CH₃       CH₃
```
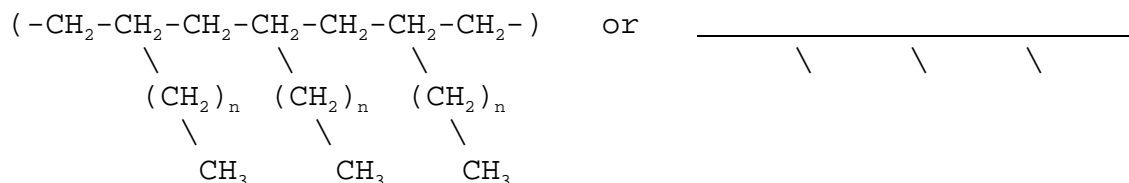
"meso" triad mm.

(4) Isotactic polyolefins

Isotactic polyolefins include a high percentage of
isotactic sequences, i.e., successive "meso" dyads m, or two
successive methyl groups on the same side of the polymer plane
(Ewen Brief, p. 1; Ewen et al., U.S. Patent 4,892,851 (Ewen
Ex. No. I (EE I)), col. 1, l. 43, to col. 3, l. 6; Ewen, U.S.
Patent 5,036,034 (Appendix F), col. 1, l. 12-47; Dolle
Application 08/147,006, specification, p. 1, l. 6-8). A
"meso" triad mm is a set of two successive "meso" dyads m. A

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"meso" triad mm has the following general configuration (Ewen

Brief, p. 3):

$$\overline{\qquad\qquad\qquad\qquad\qquad\qquad}$$
$$\backslash \qquad \backslash \qquad \backslash$$
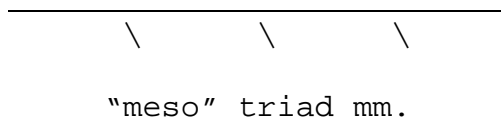
<div align="center">"meso" triad mm.</div>

Isotactic polyolefins generally have a high percentage of

"meso" triads mm.

Given the above definitions and our finding that persons

skilled in the art generally would not have expected anything

other than hydrogen on either side of the polymer plane of

homopolymerized ethylene or polyethylene homopolymer, we find

that ethylene generally cannot itself be addition polymerized

to form a polymer including isotactic sequences, i.e., "meso"

dyads m. However, we find no evidence in this interference

which indicates, and Ewen has not explained why persons

skilled in the art reasonably would not have expected, that

polymers having isotactic, syndiotactic, hemiisotactic, or

syndio-isoblock sequences cannot be produced by copolymerizing

ethylene or any other olefin which is symmetrical about its

unsaturated double bond with propylene or any other 1-olefin

by conventional processes using a metallocene catalyst.

       (5) <u>Syndiotactic polyolefins</u>

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    Syndiotactic polyolefins generally include a high

percentage of syndiotactic sequences, i.e., "racemic" dyads r,

or successive methyl or other alkyl groups on opposite sides

of the polymer plane (Ewen Brief, pp. 2-3; Ewen et al., U.S.

Patent 4,892,851 (EE I), col. 1, l. 43, to col. 3, l. 6; Ewen,

U.S. Patent 5,036,034 (Appendix F), col. 1, l. 12-47; Dolle

Application 08/147,006, specification, p. 1, l. 12-14):

$$\diagdown$$
$$\diagdown$$
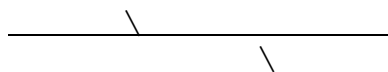
                    "racemic" dyad r

A "racemic" triad rr generally has the following configuration

(Ewen Brief, pp. 3-4, bridging para.):

$$\diagdown$$
$$\diagdown \qquad \diagdown$$
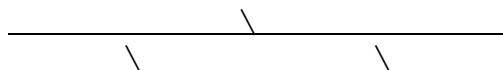
                    "racemic" triad rr.

Syndiotactic polyolefins generally have a high percentage of

"racemic" triads rr.

            (6)   <u>Hemiisotactic polyolefin</u>

    Hemiisotactic polyolefins generally have one or more of

the following configurations:

$$\diagdown \quad \diagdown \quad \diagdown \quad \diagdown \quad \diagdown \quad \diagdown \quad \diagdown$$
$$\diagdown \qquad \diagdown \qquad \diagdown$$
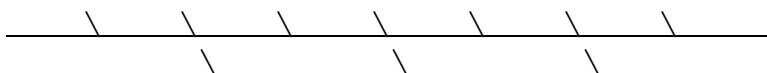
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where each $\underset{\diagdown}{\diagdown}$ is the radical $-(CH_2)_n-CH_3$, wherein n is 0 or an

integer, randomly positioned on either one side of the polymer

plane as indicated by $\diagdown$ or the other side as indicated by $\overline{\diagdown}$

(Ewen Brief, p. 4; Ewen, U.S. Patent 5,036,034 (Appendix F),

col. 1, l. 52, to col. 2, l. 22, and col. 4, l. 15-38).

(7) Isoblock polyolefin

Isoblock polyolefins generally have blocks of isotactic

sequences separated by a tertiary carbon atom having the

opposite configuration with respect to the configuration of

the blocks

of isotactic sequences relative to the polymer plane (Dolle

Application 08/147,006, specification, p. 1, l. 21-25), e.g.,

the isoblock polyolefin mmrrmm depicted below:

$$\overline{\diagdown\diagdown\diagdown\diagdown\diagdown\diagdown}$$
$$\diagdown$$

Isoblock polyolefin
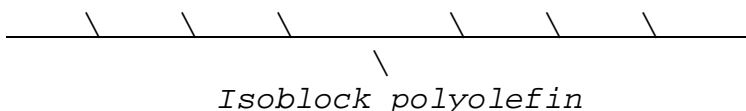
B. Disputed terms and phrases

With the above definitions as background, we proceed to

interpret the following phrases in the parties' claims:

I. In Claims 4, 16, 19, 28, 31, and 32 of

Application 08/147,006 (Paper No. 64, Appendix 1)(Appendix D),

Dolle employs the phrase "syndio-isoblock polymer having

molecular chains in which syndiotactic and isotactic sequences

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are present and the sequence length is 3 to 50 monomer units"

(emphasis added) to define a product produced by a

polymerization process which is conventional but for the use

of a catalyst composition comprising a metallocene compound of

formula (I), which lacks bi-lateral symmetry;

II. In Claims 32-35 of Application 08/147,006

(Paper No. 64, Appendix 1)(Appendix D), Dolle employs the

phrase "used to make a catalyst to produce syndio-isoblock

polymers having molecular chains in which syndiotactic and

isotactic sequences are present and the sequence length is 3

to 50 monomer units" (emphasis added) in conjunction with the

specific metallocene compounds and catalysts shown in formula

I;

III. In Claims 4, 16, 19, and 31 ("propylene or"

omitted from, and [a hydrogen atom or] added to, Claim 31)

(Appendix D) of Application 08/147,006, Dolle employs the

phrase "by polymerization of propylene or an olefin of the

formula RCH=CHR' in which R and R' are identical or different

and are

[a hydrogen atom or] an alkyl radical having 1 to 14 carbon

atoms or R and R' combine with the carbon atoms joining them

together to form a ring" to specify the olefins from which "a

syndio-isoblock polymer having molecular chains in which

syndiotactic and isotactic sequences are present" may be

produced;

IV. In Claim 36 of Application 08/147,006 (Paper

No. 64, Appendix 1)(Appendix D), Dolle claims the process of

Claim 31 wherein said olefin is "ethylene or propylene"; and

V. In Claim 37 of Application 08/147,006 (Paper

No. 64, Appendix 1)(Appendix D), Dolle claims the process of

Claim 31 wherein said olefin is a "1-olefin".

As basis for our conclusions as to the meaning of the

above-quoted phrases in Dolle's claims, we find:

(1) Syndio-isoblock polyolefins generally have blocks of

isotactic sequences separated by a syndiotactic sequence

(Dolle, Application 08/147,006, specification, p. 3, l. 5-12).

With

that broad definition as basis, we find that each separating

syndiotactic sequence may have two possible configurations

relative to the polymer plane. For example, a syndio-isoblock

polyolefin with a syndiotactic sequence separating blocks of

isotactic sequences may have the mmrrrmm configuation below:
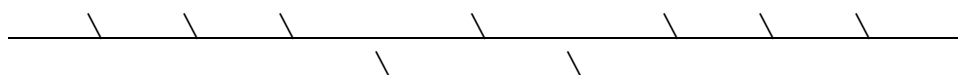
(mmrrrmm).

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Alternatively, a syndio-isoblock polyolefin with a

syndiotactic sequence separating blocks of isotactic sequences

may have the following mmrrmm configuration:

```
_____
                                \
```
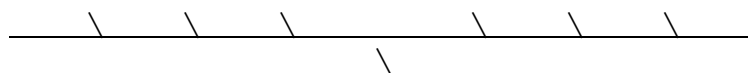
(mmrrmm).

The distinction is material to the issues presented in this

interference because the pentad distribution data taken from

the C-13 NMR spectrum of a syndio-isoblock polyolefin having

the mmrrrrmm configuration and the average sequence length of

the isotactic and syndiotactic sequences calculated for that

syndio-isoblock polyolefin differ significantly from the

pentad distribution data taken from the C-13 NMR spectrum of

the

syndio-isoblock polyolefin having the mmrrmm configuration and

the average sequence length of the isotactic and syndiotactic

sequences calculated therefrom.

    (2) Syndio-isoblock olefin polymers having molecular

chains in which syndiotactic and isotactic sequences are

present and

the average sequence length is 3 to 50 monomer units, eg.,

polymers with mmrrrrmm configurations, are all hemiisotactic

olefin polymers, accepting the structural definition of

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hemiisotactic olefin polymers in Ewen, U.S. Patent 5,036,034

(Appendix F). However, as structurally defined in Ewen, U.S.

Patent 5,036,034 (col. 1, l. 52, to col. 2, l. 22, and col. 4,

l. 15-38), hemiisotactic olefin polymers, eg., polymers with

mmrrmm configurations, are not likely to be syndio-isoblock

olefin polymers having molecular chains in which syndiotactic

and isotactic sequences are present and the average sequence

length is 3 to 50 monomer units. See Ewen, U.S. Patent

5,036,034,

col. 1, l. 52, to col. 2, l. 22, and col. 4, l. 15-38.

     (3) The syndio-isoblock polypropylene polymers having

molecular chains in which syndiotactic and isotactic sequences

are present and the sequence length is 3 to 50 monomer units

which Dolle exemplifies in Application 08/147,006 and produced

by polymerizing propylene with a metallocene catalyst

purportedly representative of the metallocene catalysts Dolle

generically describes, reasonably appear to be patentably

indistinct from the hemiisotactic polypropylene polymer Ewen

exemplifies in U.S. Patent 5,036,034 and produced by

polymerizing propylene with

a metallocene catalyst purportedly representative of the

metallocene catalysts Ewen generically describes. Compare

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the hemiisotactic polypropylene produced by polymerizing

propylene at 65° C. in Example IV of Ewen, U.S. Patent

5,036,034 (Appendix F), using methylaluminoxane and iPr(3MeCp-

1-Flu)ZrCl$_2$ in methylene chloride as the catalyst, which

hemiisotactic polypropylene is characterized by the pentad

composition of

Table II from its C-13 NMR spectra, with the syndio-isoblock

polypropylenes Dolle produced by polymerizing propylene at

70° C., 60° C., 50° C., 40° C. and 10° C. in his Examples 8-12

(Dolle Application 08/147,006, spec., pp. 17-20), using

methylaluminoxane and iPr(3MeCp-1-Flu or 2MeCp-1-Flu)ZrCl$_2$[4] in

toluene as the catalyst, which also are characterized by

pentad compositions from C-13 NMR spectra presented at the end

of each example of Dolle Application 08/147,006. Ewen states

(Ewen,

U.S. Patent 5,036,034, col. 9, l. 23-32; emphasis added):

> This invention has taken a known syndiospecific
> catalyst precursor with bi-lateral symmetry and added a
> methyl group on one of the cyclopentadienyl groups to
> eliminate the bi-lateral symmetry. The <u>new catalyst</u>

---

[4]   Dolle describes the synthesis of iPr(3MeCp-1-Flu)ZrCl$_2$
in Example 2 (Application 08/147,006, spec., p. 8, l. 19-23).
Accordingly, Dolle's reference to iPr(2MeCp-1-Flu)ZrCl$_2$ for
Examples 8-12 (Dolle Application 08/147,006, spec., p. 17,
l. 24-26) may be incorrect. The formulas iPr(3MeCp-1-Flu)ZrCl$_2$
and iPr(3MeCp-9-Flu)ZrCl$_2$ define the same compound.

produces a structure of polypropylene termed
hemiisotactic
due to every other methyl group of the polypropylene
being
above the plane in a Fischer projection. <u>Hemiisotactic
polypropylene is noncrystalline</u> and can be used as a
plasticizer with syndiotactic and isotactic
polypropylene.

According to Dolle, the average length of the isotactic

sequences (n_{iso}) and the syndiotactic sequences (n_{syn}) of the

polypropylenes produced in accordance with Examples 8-12 of

Application 08/147,006 (Spec., pp. 17-20) are:

<u>Dolle Examples</u>	<u>8</u>	9	<u>10</u>	<u>11</u>	<u>12</u>
n_{iso}	3.7	4.1	4.0	3.7	4.4
n_{syn}	3.7	4.0	3.7	3.7	4.5

On pages 3-4 of the Declaration of Andreas Winter

(Winter)(Record of Party Dolle et al.(RD), pp. 3-4 (RD 3-4)),

Winter provides a triad analysis of the pentad compositions

indicated by the C-13 NMR spectra reported for polypropylene

produced in accordance with Dolle's Example 8, calculated the

average length of the isotactic sequences n_{iso} and the

syndiotactic sequences n_{syn} for the polypropylene produced

using the data from said triad analysis and Winter's formulas

(I) and (II), and showed that the n_{iso} and n_{syn} values he

calculated correspond to the n_{iso} and n_{syn} values reported by

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Dolle in Example 8. Employing the same triad analysis of the

pentad composition indicated by the C-13 NMR

spectra for the polypropylene produced in accordance with

Ewen's Example IV (Ewen, U.S. Patent 5,036,034, col. 8, l. 15-

29; C-13 NMR spectra data reported at col. 9, Table II) and

the same formulas to calculate the average sequence length of

its isotactic and syndiotactic sequences, we calculate n_{iso}

values

of 3.6 (calculated) and 3.5 (observed) and n_{syn} values of

4.4 (calculated) and 4.2 (observed).[5]

    (4) The syndio-isoblock polymers of Dolle Application

08/147,006 are described as having long isotactic and

syndiotactic sequences (Spec., p. 1, l. 1-2).

    (5) Dolle states that his "invention accordingly

provides a syndio-isoblock polymer of a 1-olefin of the

---

[5]   mmmm)   0.33 (cal.) n_{isi}(cal.) = 1 + 2mm/mr = 3.64
    mmmr) mm   =
    rmmr)   0.32 (obs.) n_{isi}(obs.) = 1 + 2mm/mr = 3.46

    mmrr)   0.25 (cal.)
    mmrm) mr =
    rmrr)
    rmrm)   0.26 (obs.)

    rrrr)   0.43 (cal.) n_{syn}(cal.) = 1 + 2rr/mr = 4.44
    rrrm) rr =
    mrrm)   0.41 (obs.) n_{syn}(obs.) = 1 + 2rr/mr = 4.15

formula RCH=CHR' in which R and R' are identical or different

and are an alkyl radical having 1 to 14 carbon atoms"

(Application 08/147,006, spec., p. 3, l. 5-8). The complete

statement is reproduced below (Application 08/147,006, spec.,

p. 3, l. 5, to p. 4, l. 25):

> The present invention accordingly provides a syndio-
> isoblock polymer of a 1-olefin of the formula RCH=CHR'
> in which R and R' are identical or different and are
> an alkyl radical having 1 to 14 carbon atoms or R and R',
> with the carbon atoms joining them, form a ring, and the
> said polymer has molecular chains in which syndiotactic
> and isotactic sequences are present and the sequence
> length is 3 to 50 monomer units.

> Furthermore, the invention provides a process for the
> preparation of the abovementioned syndio-isoblock
polymers
> by polymerization of a 1-olefin of the formula RCH = CHR'
> in which R and R' have the abovementioned meaning, at a
> temperature of -60 to 100°C, a pressure of 0.5 to 100 bar,
> in solution, suspension or in the gas phase, in the
presence
> of a catalyst which is composed of a metallocene and an
> aluminoxane, wherein the metallocene is a compound of the
> formula I . . . .

We find that all compounds of formula RCH=CHR' in which R

and R' are identical or different and each is an alkyl radical

having 1 to 14 carbon atoms, or R and R', with the carbon

atoms joining them, form a ring, are olefins. However, we

find that none of the compounds of formula RCH=CHR' in which R

and R' are identical or different and each is an alkyl radical

having 1

to 14 carbon atoms, or R and R', with the carbon atoms joining

them, form a ring, are 1-olefins because the formula excludes

olefins having a terminal double bond. Notwithstanding the

apparent misnomers in Dolle's specification, party Ewen has

not explained why the teaching in Dolle Application 08/147,006

as a whole, including Dolle's teaching that monomers selected

from ethylene, propylene, 1-olefins, and compounds of the

formula RCH=CHR' in which R and R' are identical or different

and

are alkyl having 1 to 14 carbon atoms, or R and R', with the

carbon atoms joining them, form a ring, may be polymerized or

copolymerized to produce polymers having molecular chains in

which syndiotactic and isotactic sequences are present and the

sequence length is 3 to 50 monomer units (Application

08/147,006, spec., p. 11, l. 28, to p. 12, l. 7), is

technically incorrect.

Dolle's disclosure is directed to persons skilled in the

art. Accordingly, it preferably omits what is well known in

the art. Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802

F.2d 1367, 1384, 231 USPQ 81, 94 (Fed. Cir. 1986). Moreover,

Dolle's disclosure must be considered in its entirety. When

describing monomers suitable for use in producing syndio-

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isoblock polymers having molecular chains in which

syndiotactic and isotactic sequences are present and the

sequence length is 3 to 50 monomer units, Dolle states

(Application 08/147,006, spec., pp. 11-12, bridging para.;

emphasis added):

> The <u>monomers polymerized or copolymerized are olefins of</u>
> <u>the formula RCH = CHR' in which R and R' are identical</u>
> <u>or different and are a hydrogen atom or an alkyl radical</u>
> <u>having 1 to 14 carbon atoms</u> or R and R' combine with
> the carbon atoms joining them together to form a ring.
> Examples of olefins of this type are ethylene, propylene,
> 1-butene, 1-hexene, 4-methyl-1-pentane, 1-octene,
> norbornene, norbornadiene or compounds of the type
> 1,4,5,8-dimethano-1,2,3,4,4a,5,8,8a-octahydronaphthalene,
> 2-methyl-1,4,5,8-dimethano-1,2,3,4,4a,5,8,8a-octahydro-
> naphthalene, 2-ethyl-1,4,5,8-dimethano-1,2,3,4,4a,5,8,8a-
> octahydronaphthalene or 2,3-dimethyl-1,4,5,8-dimethano-
> 1,2,3,4,4a,5,8,8a-octahydronaphthalene. Preference is
> given to propylene, 1-butene and norbornene.

We presume that persons having ordinary skill in the art would

have read Dolle's disclosure as a whole with no less than the

conventional wisdom in the art. <u>Standard Oil Co. v. American</u>

<u>Cyanamid Co.</u>, 774 F.2d 448, 454, 227 USPQ 293, 298 (Fed. Cir.

1985). The misnomers on page 3 of Dolle's specification would

have been apparent to persons having ordinary skill in the art

in light of the further instruction on pages 11-12.

(6) The syndio-isoblock polymers Dolle describes are

made by <u>polymerizing or copolymerizing</u> olefin monomers in

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conventional manner, i.e., (Application 08/147,006, spec., p.

10, l. 32, to

p. 11, l. 6; emphasis added):

> . . . <u>in a known manner</u> in solution, in suspension or in
> the gas phase, continuously or batchwise, in one or more
> steps at a temperature of -60 to 200°C, preferably -30
> to 100°C, in particular 0 to 80°C.

> The overall pressure in the polymerization system is 0.5
> to 100 bar . . . .

(7) Dolle's invention is best understood in light of the

syndio-isoblock polypropylene polymers produced in accordance

with Examples 3-12 of his specification and their properties,

e.g., viscosity number in cm^{3}/g (VN); weight-average molecular

weight in g/mol (M_W); polydispersity determined using gel

permeation chromatography (GPC)(M_W/M_n); and isotacticity index,

determined using C-13 NMR spectroscopy (II)(n_{iso} = average

length of isotactic sequences; n_{syn} = average length of

syndiotactic sequences)(Application 08/147,006, spec., p. 13,

l. 8-16). Dolle's specification also discloses the

percentages of each pentad, i.e., mmmm, mmmr, rmmr, mmrr, mmrm

+ rmrr, mrmr, rrrr, mrrr, and mrrm, observed by analyzing the

C-13 NMR spectra of the polymer composition produced by the

process of each of the examples. The Figure of Dolle

Application 08/147,006 depicts a C-13 NMR spectrum. Each peak

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corresponds to a different pentad, and the intensity or area

of each peak indicates the percentage of that pentad in the

"stereochemical pentad compositions in the polymer" (Dolle

Application 08/147,006, spec., p. 15, l. 13-14). Compare the

pentad compositions reported in Table II of Ewen, U.S. Patent

5,036,034, from the C-13 NMR spectrum for the hemiisotactic

polypropylene made by the process described in Ewen's Example

IV (Ewen, U.S. Patent 5,036,034, col. 9, l. 11-22, and col. 8,

l. 21-29).

    In light of our findings above, we understand why Winter

pointed (Declaration of Andreas Winter dated July 10, 1995,

p. 2 (RD 2)) to the following statement in Randall, James C.

(Randall), "Carbon-13 Nuclear Magnetic Resonance Quantitative

Measurements of Average Sequence Lengths of Like

Stereochemical Additions in Polypropylene and Polystyrene,"

Journal of Polymer Science, Polymer Physics Edition, Vol. 14,

pages 2083-2094 (1976) (Randall, EE VI, p. 2086):

> For a sequence length measurement, an average number of
> repeating units is desired that describes a typical run
> of like stereochemical configurations terminated by
> opposite configurations on either end.

Randall's statement is the key to the meaning to be given to

the phrases "syndio-isoblock polymer[(s)] having molecular

chains in which syndiotactic and isotactic sequences are

present and the sequence length is 3 to 50 monomer units" and

"polymerization of [ethylene or] propylene or a 1-olefin of

the formula RCH=CHR' in which R and R' are identical or

different and are hydrogen or an alkyl radical having 1 to 14

carbon atoms or R and R' combine with the carbon atoms joining

them together to form a ring" to produce "syndio-isoblock

polymer[(s)] having molecular chains in which syndiotactic and

isotactic sequences are present and the sequence length is 3

to 50 monomer units" in Dolle's claims. Randall states

(Randall (EE VI), p. 2083, first sentence of the Synopsis),

"Sequence lengths of stereochemical additions in vinyl

polymers [(including copolymers)] are described in terms of

the number average lengths of like configurational

placements." Randall's reference to both polymers and

copolymers is no misnomer. Randall explains (Randall (EE VI),

p. 2083, Introduction, first paragraph, last sentence;

footnotes omitted), "[I]n copolymers, comonomer distributions,

expressed as connecting diads and triads, and number average

sequence lengths can be determined for runs of each monomer

type."

    Winter declares (Declaration of Andreas Winter dated

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July 10, 1995, p. 2, second full paragraph (RD 2; emphasis

added)):

> On the basis of the Randall calculations, the isotactic
> sequence length and the syndiotactic sequence length in
> a polymer chain are defined as follows . . . :
>
> isotactic sequence length $= n_{iso} = 1 + 2mm/mr$ (I)
>
> syndiotactic sequence length $= n_{syn} = 1 + 2rr/mr$ (II)
>
> Based on equations (I) and (II) n_{iso} and n_{syn} can be
> calculated from the data obtained from the triad analysis
> of the ^{13}C-NMR polymer spectra (relative amounts of the
> triads mm, mr and rr with mm + mr + rr = 100% or
> normalized
> mm + mr + rr = 1).

Using equations (I) and (II) above and triad analyses of

the C-13 NMR spectra pentad compositions for the polymers of

(1) Example 8, on pages 17-18 of Dolle Application 08/147,006;

(2) Examples 1, 1A, 20, 22, 22A, 33, and 33A (Tables 3 and 4)

of Ewen et al., U.S. 4,892,851 (EE I), describing processes

and catalysts for producing syndiotactic polyolefins; and

(3) Examples 2, 3, 4, 5, and 7 (Tables II and III) of Ewen,

U.S. Patent 4,522,982 (EE II), describing isotactic-

stereoblock polymers of alpha-olefins and processes for

producing the same, Winter calculated the average length of

the isotactic sequences (n_{iso}) and syndiotactic sequences (n_{syn})

for each example (Declaration of Andreas Winter dated July 10,

1995, pp. 3-4

(RD 3-5)). Based on his calculations, Winter found that
syndio-isoblock polypropylenes made in accordance with the
examples of Dolle Application 08/147,006 have molecular chains
in which syndiotactic and isotactic sequences are present and
the average sequence length of each of the syndiotactic and
isotactic sequences is 3 to 50 monomer units, whereas the
average sequence length of each of the syndiotactic and
isotactic sequences of the syndiotactic polypropylenes made in
accordance with the examples in Ewen et al., U.S. Patent
4,892,851, and the isotactic stereoblock polypropylenes made
in accordance with examples in Ewen, U.S. Patent 4,522,982, is
not 3 to 50 monomer units (Declaration of Andreas Winter dated
July 10, 1995, pp. 3-4
(RD 3-5)).[6]

In light of the evidence, we see no error in the APJ's
conclusion that, read in light of Dolle's specification, the
phrase "sequence length" in the phrase "syndio-isoblock
polymer[(s)] having molecular chains in which syndiotactic and
isotactic sequences are present and the sequence length is 3

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[6]   We note that the isotactic stereoblock polypropylenes
claimed in Ewen, U.S. 4,522,982, are defined in terms of "average
block length" and "the average block length contains from about 3
to 50 repeating units" (Ewen, U.S. Patent 4,522,982, col. 12,
Claim 2).

to 50 monomer units" appearing in Dolle's claims means "the
average length of the sequences of the polymers" (Decision On
Ewen Motion For Judgment No. 1 Under 37 C.F.R. §
1.633(a)(Paper 18)(Paper
No. 60), p. 9, first para.). As support for his conclusion,
the APJ emphasized the facts that (1) each of Dolle's examples
report a separate average sequence length for isotactic
sequences (n_{iso}) and for syndiotactic sequences (n_{syn}) for the
polymer produced by its production process; (2) the average
length of the isotactic sequences (n_{iso}) and the average length
of syndiotactic sequences (n_{syn}) Dolle reports for the polymer
produced by each exemplified process is, as is each of the
sequence lengths of the polymers defined in Dolle's claims, in
the range of 3 to 50 monomer units; and (3) Winter declares
not only that the meaning of the phrase "sequence length" is
well known in the art, but also that "[t]he isotactic sequence
length and the syndiotactic sequence length are average values
and can be derived by statistical/mathematical calculations"
(Dolle Ex. 7, pp. 1-2). We emphasize that the average length
of the isotactic sequences (n_{iso}) and the average length of
syndiotactic sequences (n_{syn}) which Dolle reports for the
polymers produced by the process of each and every example are

the same respective average lengths which one skilled in the

art would have calculated using Winter's equations (I) and

(II) and the data provided in each of Dolle's examples based

on a triad analysis of the pentad compositions from the C-13

NMR spectrum of each respective polymer (RD 2-3).

Winter declares that equations (I) and (II) were known in

the art at the time each of Dolle's applications was filed and

were known to be derived "[o]n the basis of the Randall

calculations" (RD 2-3). In support of his declaration, Winter

cites (RD 2-3) Buschermohle, Thesis Universitat Hamburg, 1987,

pp. 38 and 39 (Dolle Ex. 9 (DE 9)).[7] Ewen has not contested

Winter's declaration that equations (I) and (II)(RD 2) are in

fact derivable from Winter's equations (III) and (IV)(RD 2),

equations which are equivalent to the equations appearing on

pages 38-39 of Buschermohle (RD 3; DE 9, pp. 38-39).

Moreover, the derivation is apparent. What is not apparent to

this panel is that Winter's formulas (I) and (II) correspond

to Randall's formula (23) for triads (EE VI, p. 2089), are

defined "[o]n

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[7]   On pages 38-39 of Buschermohle's Thesis, Buschermohle
cites Randall in support of her equations (note 93, 131)(DE 9,
pp 38-39, 139, and 141).

the basis of the Randall calculations" (RD 2), or otherwise

correspond to, are defined by, or are derived from Randall's

formulas. Nevertheless, Ewen has not denied Winter's

derivation declarations. Therefore, in the absence of any

evidence to the contrary, Winter's declaration, consistent

with Buschermohle's citation of Randall with respect to

corresponding formulas (DE 9, pp. 38-39), that Winter's

equations (I) and (II) are derivations of Randall's equations

(EE VI, p. 2089), are taken as fact. Moreover, as evidenced

by pages 38 and 39 of Buschermohle, Thesis Universitat

Hamburg, 1987 (DE 9), we find that Winter's equations (I) and

(II), or derivatives thereof, were known in the art for use in

calculating the average syndiotactic and isotactic sequence

lengths of polyolefins.

Randall describes "[s]equence lengths of stereochemical

additions in vinyl polymers . . . in terms of the number

average lengths of like configurational placements" (EE VI, p.

2083, Synopsis, first sentence). Dr. Gauthier acknowledges

(Second Declaration of William J. Gauthier dated November 19,

1998,

pp. 2-3, para. 4 (Record of Junior Party Ewen, pp. 36-37

(RE 36-37); emphasis added):

      4.   The <u>concept of a number average sequence length</u> as a means of identifying or characterizing the stereochemical characteristics of a polymer such as polypropylene is <u>well know [sic] to me</u>, as is the paper by Randall . . . which is referred to in the Winter Declaration . . . . The concept of number average sequence length as a tool in characterizing stereochemical characteristics of a polymer is further addressed in substantial detail in the following book: *Polymer Sequence Determination Carbon-13 NMR Method*, James C. Randall, Academic Press, New York/San Francisco/London, 1977. . . .

While the Declaration of Carl Scott dated May 8, 1995 (RE 1), Second Declaration of Jerry L. Atwood dated August 7, 1995 (RE 16), Declaration of William J. Gauthier dated September 28, 1998 (RE 16), and Second Declaration of William J. Gauthier dated November 19, 1998 (RE 35), indicate that the phrase "the sequence length is 3 to 50 monomer units", which Dolle employs to further define syndio-isoblock polymers having molecular chains in which syndiotactic and isotactic sequences are present, might be interpreted in a variety of ways inconsistent with the disclosure of Dolle Application 08/147,006, we find the other interpretations of Drs. Scott, Atwood, and Gauthier unreasonable in light of Dolle's disclosure.

In light of Dolle's supporting specification, persons skilled in the art would not have interpreted the phrase

"syndio-isoblock polymer[(s)] having molecular chains in which

syndiotactic and isotactic sequences are present and the

sequence length is 3 to 50 monomer units" in Dolle's claims to

read on

the syndiotactic, highly isotactic, or isotactic stereoblock

polypropylenes which, according to Dr. Scott, must inherently

include 3 monomer unit "mistakes" and are well known in the

art (RE 4-5). We find that Dolle clearly distinguishes the

syndio-isoblock polymer[s] he describes from syndiotactic,

highly isotactic, and isotactic stereoblock polymers which

were known in the art at the time Dolle's applications were

filed (Spec., pp. 1-2). Thus, it would appear much more

reasonable from the teaching in Dolle's specification to

interpret the phrase "sequence length" in the phrase "sequence

length is 3 to 50 monomer units" as an average sequence length

to be consistent with Dolle's examples. This interpretation

is most consistent with Dolle's concerted effort to

distinguish syndio-isoblock polypropylenes having molecular

chains in which syndiotactic and isotactic sequences are

present and the sequence length is 3   to 50 monomer units

from known polypropylenes having molecular chains in which

syndiotactic and isotactic sequences are present as 3 monomer

unit "mistakes". The evidence indicates that

the prior art syndiotactic, highly isotactic, and isotactic

stereoblock polypropylenes, including the inherent 3 monomer

unit "mistakes" to which Dr. Scott refers, all have molecular

chains in which syndiotactic and isotactic sequences are

present at a length of 3 to 50 monomer units. However, the

evidence also shows that conventionally produced syndiotactic,

highly isotactic, and isotactic stereoblock polypropylenes do

not have molecular chains in which syndiotactic and isotactic

sequences are present and their average sequence length is 3

to 50 monomer units when calculated in accordance with

Winter's formulas (I) and (II) or the formulas published in

Buschermohle's Thesis

(DE 9, pp. 38-39). Compare again the average sequence length

Dolle reports for the syndiotactic and isotactic sequences of

the polypropylenes prepared in accordance with Examples 3-12

of Dolle Application 08/147,006 to Winter's calculations of

the average sequence length for the syndiotactic and isotactic

sequences of the syndiotactic and isotactic-stereoblock

polymers prepared in accordance with Examples 1, 1A, 20, 22,

22A, 33, and 33A of Ewen et al., U.S. Patent 4,892,851 (EE I),

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and Examples 2, 3, 4, 5, and 7 of Ewen, U.S. Patent 4,522,982

(EE II)(RD 3-5). Also see the average syndiotactic and

isotactic sequence lengths for syndiotactic polypropylene

prepared and calculated by Dr. Spaleck (Declaration of Walter

Spaleck dated July 25, 1994 (RD 16)).

In rebuttal, Dr. Gauthier (Declaration of William J.

Gauthier dated September 28, 1998 (RE 26-34); Second

Declaration of William J. Gauthier dated November 19, 1998 (RE

35-46)) declared (RE 28; RE 38; emphasis added):

> . . . <u>I do not believe</u> that the terms "isotactic sequence
> length" and "syndiotactic sequence length," as characterized
> in Section 3 of the Winter Declaration . . . and as
> specifically defined in Equations (i) and (ii) thereof,
> is what is conveyed by the Dolle et al patent application.
> Further, <u>I do not believe</u> that the construction placed upon
> the term "sequence length," in the Decision on Ewen Motion
> for Judgment No. 1 . . . and the Decision on Reconsideration
> . . . based upon the Winter Declaration and the Randall
> paper, is accurate.

In support of his beliefs, Dr. Gauthier states (RE 28; RE 38-39)

(emphasis added):

> . . . [W]hatever is intended by the use of <u>the
> term "sequence length" in the Dolle et al application,
> it cannot be used to define separate isotactic and
> syndiotactic sequence lengths following the Randall
> publication and Winter's Equations (i) and (ii)</u>. In

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this respect, the polymer structure identified in the
Dolle application as having a sequence length of 3-50
is said to be a new polymer structure, and in fact,
the Winter Declaration on page 4 specifically states:

The syndio-isoblock polymer of Dolle et al is
different from the polymers known before Dolle
et al invented the new polymer.

Yet, the Randall publication . . . specifically discloses
polypropylene which has an "isotactic sequence length"
and
a "syndiotactic sequence length" within the range of 3-50
when calculated using the Winter Equations (i) and (ii).
In this respect, reference is made to the polypropylene
described in the Randall paper at page 2090 as "amorphous
polypropylene." Based upon the pentad analysis presented
in Table II of Randall, the amorphous polymer there has
an isotactic sequence length, calculated using Winter's
Equation (i), of 3.6. The syndiotactic sequence length,
calculated in accordance with Winter's Equation (ii) from
the pentad analysis of Table II is 3.4. These
calculations
are shown in Attachment A [(RE 33) or B (RE 46)] to this
Declaration. Thus, I conclude that whatever is meant by
the Dolle sequence length, it cannot mean a polymer
having
number average sequence lengths calculated in accordance
with Winter's Equations (i) and (ii) if the intent in the
Dolle et al application is to denominate a novel polymer
by this definition and if, as stated by Winter, the Dolle
et al polymer is different from previously-known
polymers.

We note first that Gauthier erred in determining that the

number average isotactic sequence length for the amorphous

polypropylene represented by the unique C-13 NMR spectrum of

Randall's Figure 1 and the pentad distribution of Randall's

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Table II using Winter's Equation (I) is 3.6. The correct

fraction for the pentad rmmr reported in Randall's Table II

is 0.037, not the 0.087 fraction Dr. Gauthier used for his

calculations (RE 33; RE 46). Nevertheless, Randall

acknowledges that the fractions reported in Table II for the

pentads mmrm and rmrr, based on the C-13 NMR spectrum of the

particular amorphous polypropylene analyzed, have been

questioned because of poor resolution and overlap of the

corresponding peaks of the C-13 NMR spectrum of Figure 1 (see

footnote d to Randall's Table II and Figure 1 itself).

Accordingly, the evidence to which Dr. Gauthier points in

support of his beliefs is questionable.

Even if we assume, however, that Randall's Table II does

describe an amorphous polypropylene having molecular chains in

which syndiotactic and isotactic sequences are present and the

average sequence length is 3 to 50 monomer units when

calculated by Winter's formulas (I) and (II), we fail to see

how this evidence shows that the APJ erred in interpreting the

term "sequence length" in light of Dolle's specification to

mean "average sequence length". Even if we were to find that

syndio-isoblock polymers having molecular chains in which

syndiotactic and isotactic sequences are present and the

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sequence length is 3-50 monomer units are not new or conclude

that the same polymers made by different prior art processes

would have been obvious to persons having ordinary skill in

the art in view of prior art teaching, the patentability of

Dolle's new processes for making the old or obvious polymers

using the specific metallocene catalysts or the specific

metallocene catalysts which Dolle alone decribes as useful for

making the old or obvious polymers is unaffected. The

patentability of a product does not depend on the

patentability of its method of production and *vice versa*.

In re Thorpe, 777 F.2d 695, 697, 227 USPQ 964, 966 (Fed. Cir.

1985). The patentability of Dolle's process of making and/or

metallocene catalyst for use in making syndio-isoblock

polymers having molecular chains in which syndiotactic and

isotactic sequences are present and the sequence length is 3-

50 monomer units does not depend on the patentability of the

product made.

Next, Dr. Scott states (Declaration of Carl Scott, pp. 8-
9 (RE 7-8); emphasis added):

> I assume that Dolle et al by calling in their
> claims for a "syndio-isoblock polymer having molecular
> chains in which syndiotactic and isotactic sequences are
> present and the sequence length is 30[sic]-50 monomer
> units..." did not intend . . . by the quoted language
> to call for syndiotactic polypropylene or isotactic

polypropylene which were well known in the prior art.

Nevertheless, Dr. Scott also states (Declaration of Carl

Scott,

p. 9 (RE 8)):

> Based upon this assumption and the foregoing analysis,
> I believe that one skilled in the art reading the
> specification and claims of Serial No. 147,006 of
> Dolle et al, would not be able to deduce the limits
> of a polymer sequence said to be an isotactic sequence
> or a syndiotactic sequence, without knowing more about
> the particular nomenclature or analysis techniques used
> by the author in describing the polymer sequences.

Thus, rather than question the APJ's holding that the phrase

"sequence length" in the phrase "syndio-isoblock polymer

having molecular chains in which syndiotactic and isotactic

sequences are present and the sequence length is 3-50 monomer

units" refers to the average sequence length of each of the

isotactic and syndiotactic sequences present, Dr. Scott

declares that he is unable to deduce the limits of a polymer

sequence said to be an "isotactic sequence" and/or a

"syndiotactic sequence," i.e., the meaning of the phrases

"isotactic sequence" and "syndiotactic sequence," from Dolle's

specification (id.).

Dolle Application 08/147,006 presumes that persons

skilled in the art of polymerizing propylene or 1-olefins

reasonably would have understood the meaning of the terms

"isotactic"

and "syndiotactic" as they relate to and define polyolefins.

For example, at page 1 of the specification Dolle states:

It is known that polypropylene exists in various structural
isomers:

(a)   highly isotactic polypropylene in whose molecular   chains almost all of the tertiary carbon atoms have
the same configuration,

. . . . .

(c) syndiotactic polypropylene in whose molecular chains
every second tertiary carton [sic] atom has the same
configuration . . . .

It is axiomatic in patent law that patent applicants need

not disclose in the specification, and preferably omit from

the specification, that which is well known in the art.

Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d at

1384, 231 USPQ at 94; Lindemann Maschinenfabrik GMBH v.

American Hoist & Derrick Co., 730 F.2d 1452, 1463, 221 USPQ

481, 489 (Fed. Cir. 1984). That the terms isotactic and

syndiotactic were well known in the art at the time Dolle

filed U.S. Application 08/147,006 filed November 1, 1993, U.S.

Application 07/927,869, filed August 10, 1992, U.S.

Application 07/525,096, filed May 17, 1990, and Fed. Rep.

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Germany P3916553.1, filed May 5, 1989, is evident from the

prior art cited of record in this interference. For example,

Ewen teaches at column 2, lines 39-46, of U.S. Patent

4,522,982 (EE II), patented June 11, 1985:

> It will be appreciated by those skilled in the art that
> polypropylene has heretofore been prepared in various forms.
> The forms which are well known to those of skill in the art
> are isotactic, syndiotactic, atactic and isotactic-atactic-
> stereoblock. The latter material was defined by Natta et
> al, as consisting of segments of isotactic polypropylene and
> segments of atactic polypropylene within the same chain.

At column 1, line 24, column 2, line 29, of U.S. Patent

4,892,851 (EE I), patented January 9, 1990, and based on an

application filed July 15, 1988, Ewen et al. meticulously

define the terms isotactic and syndiotactic as applied to

polypropylene and compare the characteristics of each to the

other "[a]s disclosed in . . . patent references and as known

in the art" (U.S. Patent 4,892,851, col. 1, l. 43-44). Thus,

Dr. Scott's view that Dolle's disclosure inadequately supports

the claimed invention can have merit only if persons skilled

in the art, having knowledge of Randall's general teaching and

Buschermohle's published formulas for calculating average

sequence length of isotactic and syndiotactic sequences, still

would not have understood the meaning of average sequence

length in the context of the "syndio-isoblock polymer[s]

having molecular chains in which syndiotactic and isotactic

sequences are present and the [average] sequence length is 3

to 50 monomer units" of Dolle's claims.

Even if persons having ordinary skill in the art would

have interpreted the phrase "sequence length" to mean "average

sequence length," Dr. Atwood declares that the meaning of

"average sequence length" as applied to the sequence length

of the isotactic sequences and the syndiotactic sequences of

the polypropylenes or polyolefins to which Dolle refers in

Application 08/147,006 is unclear because average sequence

length may be determined in many different ways. Dr. Atwood

states at page 1 of the Second Declaration of Jerry L. Atwood

(RE 16; emphasis added):

> Fundamentally, the Dolle position as presented in Dolle
> Opposition Motion No. 1 and Dr. Winter's declaration . .
> .
> appears to be that the term "sequence length" actually
> means
> a number average sequence length as determined in
> accordance
> with equations ultimately leading to equations 23 and 24
> as
> found in Randall . . . . If the term, "sequence length"
> were considered out of context, this is one possible
> meaning
> of the term, but it is by no means the only meaning. It
> is

        simply impossible based on the disclosure found in . . .
        Application Serial No. 147,006 to determine what special
        meaning is to be attributed by the phrase "a sequence
length
        of 3-50 monomer units" whether it is applied to an
isotactic
        sequence or to a syndiotactic sequence or to a
distribution
        of meso and racemic dyads as Dr. Winter may be arguing.

        We cannot agree with Dr. Atwood's conclusion that "[i]t

is simply impossible based on the disclosure found in . . .

Application Serial No. 147,006 to determine what special

meaning is to be attributed by the phrase 'a sequence length

of 3-50 monomer units'" (id.). Dr. Atwood has not explained

why persons skilled in the art, with full knowledge of

Randall's teaching and Buschermohle's formulas for calculating

average sequence length, (1) would not have understood that

the sequence lengths of stereochemical additions of vinyl

polymers may be accurately described in terms of the average

sequence length of like configurational placements in

accordance with Randall's teaching (EE VI), and (2) could not

have accurately calculated the average sequence length for the

isotactic and syndiotactic sequences present in a polyolefin

from the unique stereochemical pentad distribution indicated

by its C-13 NMR spectra and the totality of information Dolle

discloses, especially since Dolle discloses the average

sequence length of each of the isotactic (n_{iso}) and

syndiotactic (n_{syn}) sequences which he calculated for the

polymer of each of his examples and the unique stereochemical

pentad distribution indicated by the polymer's C-13 NMR

spectra. Dolle's Examples 3-12 provide (1) the average

isotactic sequence length (n_{iso}) and the average syndiotactic

sequence length (n_{syn}) for each of the different syndio-

isoblock polypropylenes prepared by the process of making

polyolefins described in each example, and (2) the pentad

distributions indicated for each polymer

from a C-13 NMR spectrum analysis of each polymer prepared in

accordance with the method of making polyolefins described in

each example. While Dolle Application 08/147,006 does not

show one skilled in the art precisely how he calculated the

average sequence length of the isotactic and syndiotactic

sequences for any given polyolefin, we find that Dolle's

specification as a whole would have enabled persons skilled in

the art with full knowledge of Randall's and Buschermohle's

disclosures to accurately determine the average sequence

length of the syndiotactic and isotactic sequences of any new

polyolefin

based on a triad analysis of the pentad distribution from its

C-13 NMR spectrum.

Winter cites (RD 2-4) Randall for its teaching that the average sequence length of the isotactic and syndiotactic sequences of a polymer may be calculated using either a pentad or triad analysis of the pentad distribution indicated by its C-13 NMR spectrum. According to Winter, a triad analysis is preferred (RD 3). Ewen does not deny, and the greater weight of evidence supports our finding, that Randall's teaching was well known to persons having ordinary skill in the art at the time Dolle's earliest applications were filed (RD 2-3; RE 27-28,

para. 4; RE 36-37, para. 4; DE 9, pp. 38, 139, and 141 (footnotes 93 and 131)). Citing Randall's instruction, Winter declares (RD 2; emphasis added):

> To get a better accuracy, instead of the data of the pentad
> analysis normally the data of the triad analysis are used
> for the sequence length calculation (Randall, page 2092,
> line 26).

At page 2092, Randall states:

> Since the relative areas of the *mmmr* resonance appears
> {sic]   to be too large relative to the *rrmm* and *mrrm*
> resonances and
> could be a major source of error in the analysis, it may
> be better to reduce the pentad data to triads . . . [to
> calculate] the average sequence length . . . . [T]he
> error

     in analyses of polymers with long average sequence
lengths can be high. . . . Despite this handicap, this method
     could provide an accurate determination of the average
     sequence lengths in amorphous polypropylenes and others
     where the average sequence length is less than ten units.

In the paragraph bridging pages 2093-2094, Randall concludes:

     Average sequence lengths in the 1-5 range can probably
     be determined with a high degree of accuracy. With the
     present method for area determinations, the accuracy is
     estimated at $\pm$15 per cent for sequences of like additions
     5-10 units long and $\pm$25 per cent for a range of 10-15
units.
     As assignments are confirmed, the accuracy will depend
     totally upon the methods used to measure relative areas.
     Some assignment difficulties can be resolved if the observed
     resonances can be combined to produce either diad or triad
     distributions. This approach will depend, of course, upon
     an identification of resonances that arise from sequences
     with common diad or triad centers.

We note that Buschermohle, citing Randall, used data from a

triad analysis of C-13 NMR spectrum and Winter's formulas

(III) and (IV), which correspond to Winter's formulas (I) and

(II)(RD 2-3), to calculate the average sequence length for

isotactic and syndiotactic sequences of her polypropylenes (DE

9, pp. 38-39). We repeat our finding, based on the

uncontested declaration of Winter (RD 2), Buschermohle's

corroborative citation of Randall (DE 9, pp, 38-39), and Dr.

Gauthier's declarations (RE 27-28

and 36-37), that Winter's formulas (I-IV) would have been both derivable from Randall's teachings and known to persons skilled in the art as of the earliest effective filing date of the subject matter claimed in Dolle's applications.

Nevertheless, Dr. Atwood persists, "[i]t is simply impossible based on the disclosure found in the party Dolle's Application Serial No. 147,006 to determine what special meaning is to be attributed by the phrase 'a sequence length of 3-50 monomer units' whether it be applied to an isotactic sequence or to a syndiotactic sequence or to a distribution of meso and racemic dyads as Dr. Winter may be arguing" (RE 16; emphasis added). We disagree with Dr. Atwood's assessment of Dolle's disclosure.

Dr. Atwood first reasons that the term "sequence length" or "isotactic sequence" has a different meaning in Kaminsky et al, U.S. Patent 4,841,004 (EE VII), which is assigned to the same assignee as Dolle Application 08/147,006 (RE 16, last full sentence). For example, Dr. Atwood points out (RE 17):

> In the '004 patent, a reference to an isotactic sequence of 2 monomer units necessarily means just what it says since any isotactic sequence must necessarily have at least 2 monomer units. Finally, in the various examples, the '004 patent makes reference to "an isotactic sequence length of n_c...."

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In light of Kaminsky's disclosure, Dr. Atwood opines that persons skilled in the art could not have determined from Dolle's specification whether references to "isotactic sequences" refer to average length sequences or not (RE 17). However, Dr. Atwood does not explain why the invention disclosed by Kaminsky and the definitions Kaminsky used in his specification to define the subject matter he claimed would have led the skilled artisan to interpret the subject matter Dolle claims in a manner inapposite to the teaching of Dolle's specification. Dolle's claim language is to be interpreted in light of its supporting specification, i.e., in light of the description of the invention in Dolle Application 08/147,006. Standard Oil Co. v. American Cyanamid Co., 774 F.2d 448, 227 USPQ 293 (Fed. Cir. 1985), instructs at 452, 227 USPQ2d at 296:

> The descriptive part of the specification aids in
> ascertaining the scope and meaning of the claims
> inasmuch as the words of the claims must be based
> upon the description. The specification is, thus,
> the primary basis for construing the claims.

So long as they use words in the same way in the claims and in the specification, inventors may be their own lexicographers. Fonar Corp. v. Johnson & Johnson, 821 F.2d 627, 632, 3 USPQ2d 1109, 1113 (Fed. Cir. 1987).

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The claims in Application 08/147,006 are to be read
primarily in light of the specification of Dolle Application
08/147,006. Dolle's specification (1) defines n_{iso} as the
average length of isotactic sequences, (2) defines n_{syn} as the
average length of syndiotactic sequences, (3) provides
numerical values for n_{iso} and n_{syn} for polypropylene produced by
the process of each of Examples 3-12, (4) describes a unique
stereochemical pentad distribution for polypropylene produced
by the process of each of Examples 3-12 from its respective C-
13 NMR spectrum, and thus, (5) provides information sufficient
to enable one skilled in the art to (a) accurately calculate
the average sequence length of the isotactic and syndiotactic
sequences of newly synthesized polyolefins based on Randall's
preferred triad analysis of the unique pentad distribution of
each polymer from its C-13 NMR spectrum using art-recognized
formulas for calculating average sequence length, and (b)
verify the calculations of the average sequence length of the
isotactic and syndiotactic sequences by reference to the n_{iso}
and n_{syn} disclosed for the polypropylene of each of Dolle's
examples. In short, we find it incongruous that persons
skilled in the art would have understood from Dolle's
specification, especially including the supporting examples,

that the average sequence length of the isotactic and
syndiotactic sequences to which Dolle's claims refer may be
calculated in a manner inconsistent with Randall's well known
teaching that the average sequence length is most accurately
calculated using a triad analysis of C-13 NMR pentad
distributions and formulas well known for use in calculating
average sequence length based on a triad analysis, especially
given Dolle's reference examples providing pentad distribution
data based on C-13 NMR spectra and calculated n_{iso} and n_{syn}
values with which to verify one's calculations.

Therefore, contrary to Dr. Atwood's opinion (RE 16-17),
we find that Dolle's references to "an average length of
isotactic sequences" and "an average length of syndiotactic
sequences" have special meanings and that their special
meanings readily could have been determined from the
disclosure of Dolle Application 08/147,006. The average
sequence length values (n_{iso} and n_{syn}) Dolle provides for the
polymers produced by the methods of his examples can only be
reproduced employing the accurate triad analysis of Dolle's
pentad distribution data Randall describes and the formulas
persons skilled in the art, eg. Buschermohle, are known to
have utilized for calculating average sequence lengths based

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on a triad analysis of pentad distribution data. Persons

skilled in the art would have realized from Dolle's disclosure

that the n_{iso} and n_{syn} values for the polymers produced by the

processes of Dolle's examples, and accordingly, the n_{iso} and n_{syn}

values for all polymers produced by the processes and

catalysts Dolle claims, cannot be calculated from the unique

pentad distribution data Dolle and others provide using less

accurate analyses and different formulas.

Dr. Atwood opines that Randall's equations are based on

certain presumptions and that the n_{iso} and n_{syn} values Dolle

reports for Example 8 cannot be verified from the reported

data from Randall's equations. We can neither confirm nor

deny   Dr. Atwood's opinions based on the evidence presented

in this interference. The record shows that (1)

Buschermohle's formulas were known in the art at the time

Dolle filed his applications (DE 9), (2) Ewen did not deny

Winter's declaration that Winter's formulas (I) and (II) are

based on, and derived from, the Randall calculations (RD 2-3),

and (3) the n_{iso} and n_{syn} values Dolle reports for Example 8 can

be verified from the data Dolle discloses using Buschermohle's

formulas for calculating n_{iso} and n_{syn} which are mere

transformations of Winter's formulas (I) and (II)(RD 3-4).

Thus, it would have been well within the ordinary skill of the artisan to calculate the average sequence length for the isotactic and syndiotactic sequences of the polypropylenes of Dolle's Examples 3-12 using Buschermohler's formulas, verify Dolle's disclosed results, and then screen other polyolefins for "molecular chains in which syndiotactic and isotactic sequences are present and the sequence length is 3 to 50 monomer units" by accurate triad analyses of pentad distributions from C-13 NMR spectra and calculations based on Buschermohler's prior art formulas. The preponderance of the evidence presented in this interference indicates that it would have been well within the ordinary skill in the art to determine the metes and bounds of the subject matter Dolle claims.

Moreover, the evidence indicates that our interpretation of the language of Dolle's claims is not only consistent with the description of the invention and examples in Dolle Application 08/147,006 but also consistent with the description of the invention and examples disclosed in Ewen, U.S. 5,036,034; Ewen et al., U.S. 4,892,851; and Ewen, U.S. 4,522,922, based on similar calculations using C-13 NMR pentad distribution data

provided for each disclosure's examples (RD 4-5). We cannot

accept Dr. Atwood's view that persons skilled in this art

would have been confused by the language of Dolle's claims in

light of Dolle's examples and the distinctions he makes

between the syndio-isoblock polymers made by the processes he

claims and the syndiotactic and isotactic-stereoblock

polyolefins made in accordance with prior art processes. That

some effort might be required to determine the metes and

bounds of the subject matter Dolle claims is not detrimental

to patentability. Ewen has not established that persons

skilled in the art would have been confused by the language of

Dolle's claims or unduly burdened to determine the metes and

bounds of the subject matter claimed. Considered in a vacuum,

the language of inventors' claims may be confusing to anyone

working in the art. However, persons having ordinary skill in

the art must interpret claim language in light of the

supporting specification. In that light, the meaning of the

phrase " a <u>syndio-isoblock</u> polymer having molecular chains in

which <u>syndiotactic and isotactic sequences are present and the</u>

<u>sequence length is 3 to 50 monomer units</u>" in Claims 4, 16, 19,

28, 31, and 32 of Dolle Application 08/147,006 would have been

sufficiently definite.

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We proceed to interpret the meaning of the phrase "<u>used to make a catalyst</u> to produce syndio-isoblock polymers having molecular chains in which syndiotactic and isotactic sequences are present and the sequence length is 3 to 50 monomer units" (emphasis added) in Claims 32-35 of Application 08/147,006 (Appendix D). The phrase "used to make a catalyst" in Dolle's claims does not appear to limit the claimed metallocenes or metallocene catalysts any more or less than would the functional language "useful to make a catalyst" or "for use in making a catalyst" in its stead. The histories of prosecution of the metallocene compounds claimed in Dolle's applications and Ewen's pending and patented applications, and the arguments made in this interference, indicate that the phrase "used to make a catalyst" has been and is to be interpreted as a functional limitation of the scope of the claimed metallocene compounds. For example, compare Claim 1 of Ewen, U.S. Patent 5,036,034, to Claim 1 in Ewen's pending Reissue Application 08/489,800. Whether the claimed metallocene compounds are "used to make a catalyst," "useful to make a catalyst" or available "for use in making a catalyst", the scope of metallocene compounds claimed appears to be the same. We do not understand, and neither party to this interference

has adequately explained, how or why claimed compounds used

for making a catalyst for production of syndio-isoblock

polymers differ from compounds of the same formula useful to

make, or available for use in making, catalysts for production

of the same syndio-isoblock polymers.

More significant to our understanding of the metes and

bounds of the claimed metallocene compounds, and metallocene

catalysts comprising the same metallocene compounds, is the

extent to which the language "used to make a catalyst to

produce syndio-isoblock polymers having molecular chains in

which syndiotactic and isotactic sequences are present and the

sequence length is 3 to 50 monomer units" in Claims 32-35

further limits the scope of the metallocene compounds defined

by general

formula (I) in Dolle's Claim 32. We hold, consistent with

the APJ's earlier decisions (Paper No. 52, pp. 9-11; No. 54,

pp. 8-13; No. 55; No. 58; No. 60; No. 61, pp. 2-3; and No. 77,

pp. 6-7, bridging para.), that the claim language functionally

limits the scope of the claimed metallocene compounds having

the general formula (I) to those metallocene compounds of

general formula (I) which invariably catalyze production of

"syndio-isoblock polymers" as defined in Dolle's Claim 32

under conventional polymerization conditions. Compare the

APJ's interpretation of comparable claim language in Ewen,

U.S. 5,036,034 (Paper No. 52, p. 11, first full para.), with

the disclosure in Ewen, U.S. 5,036,034 (Appendix F), at column

5, line 65, to column 6, line 3, and column 9, lines 26-28.

The APJ consistently interpreted language in Dolle's

Claim 32 which is substantially the same as that appearing in

Claim 1 of Ewen, U.S. 5,036,034, as follows (Paper No. 77,

pp. 6-7, bridging para.):

> Dolle's claim does not expressly combine two inventions
> into a single claim. Rather, Dolle's claimed invention
> is expressly directed to a metallocene compound. In my
> view, the language "used to make a catalyst to produce
> syndio-isoblock polymers . . ." serves to further limit
> the claimed metallocenes. . . . [T]he claim is similar
> to a product by process claim where the reference to the
> process may further characterize the product. To come
> within the scope of Dolle's claim 32, for example, the
> metallocene must not only meet formula I but must only
> "produce syndio-isoblock polymers having molecular chains
> in which syndiotactic and isotactic sequences are present
> and the sequence length is 3 to 50 monomer units by
> polymerization of an olefin" of the specified formula.
> Compounds which produce such polymers and also produce
> polymers that do not have the requisite average sequence
> length due to the particular process conditions do not

meet
> the express limitations of the claim. The construction
> is consistent with Dolle's specification. See Dolle
> Specification, p. 3, lines 5-12.

Ewen has not explained why the APJ's interpretation of the

language in Dolle's claims is erroneous. The APJ's

interpretation, which we hereby adopt, is consistent with

Ewen's own interpretation of the scope of claims which contain

comparable language in Ewen, U.S. 5,036,034 (Ewen Opposition

No. 1 To Dolle Motion For Judgment)(Paper No. 29)(APJ Decision

On Dolle Motion For Judgment Pursuant To 37 CFR § 1.633(a)

(Paper 14)(Paper No. 52)). Dolle asked the APJ to hold Ewen's

claimed "metallocene compound used to make a catalyst to

produce hemiisotactic olefin polymers comprising the general

formula R"(CpR$_n$)(CpR'$_m$)MHal$_2$" (Ewen, U.S. 5,036,034, Claim 1)

unpatentable over metallocene compounds generally described in

Miya, U.S. Patent 4,931,417 (Appendix B), and/or Klouras.

Ewen argued (Paper No. 29, p. 3):

> What the party Dolle has done in its attempt to show
> anticipation, is to simply ignore very important limitations
> found in independent claims 1 and 5 of the Ewen patent.
> Thus, independent claim 1 calls for a metallocene compound
> "used to make a catalyst to produce hemiisotactic olefin
> polymers ...." . . . . The party Dolle's analysis of the
> Ewen claims and the prior art references completely ignores
> [sic] these claim limitations . . . .

Ewen cited the following statement from Dr. Atwood's

declaration (Paper No. 29, p. 4):

> [W]hile the Miya patent discloses many metallocene
> compounds, both bridged and unbridged, some of which are
> shown to be effective in producing isotactic polypropylene

> or atactic polypropylene, there is no disclosure in Miya
> et al of metallocene catalysts effective in the production
> of hemiisotactic polypropylene . . . .

Ewen continued (Paper No. 29, pp. 6-7):

> [T]he significance of the claim limitations disregarded
> by the party Dolle in putting forth its motion, become
> all the more apparent when one considers the file history
> of the Ewen '034 patent. The claims in the Ewen application
> . . . were rejected on the grounds of obviousness type
> double patenting in view of claims of [Ewen et al.,] U.S.
> Patent No. 4,892,851 . . . . The claim limitations which

> party Dolle has completely disregarded . . . played a
> significant part in securing allowance . . . .[8]

Ewen previously argued (Paper No. 29, p. 8), and our

interpretation of the functional language of Dolle's Claim 32

in-part is based on, the axiom that "[c]laims are to be read

and construed in light of the specification and the

prosecution history . . . ." ACS Hosp. Sys., Inc. v.

Montefiore Hosp.,

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[8]   During prosecution of the subject matter claimed in
U.S. 5,036,034, Ewen urged (Paper No. 29, p. 7):

> There is no reference to or suggestion of hemiisotactic
> polyolefins . . . in any claim of U.S. Patent No. . . .
> 4,892,851.

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732 F.2d 1572, 1577, 221 USPQ 929, 932 (Fed. Cir. 1984). The

axiom applies to the subject matter Dolle claims just as it

applied to the subject matter claimed in Ewen, U.S. Patent

5,036,034.

Finally, because (1) Claims 4, 16, 19, and 31 (Appendix

D) of Dolle Application 08/147,006 are directed to processes

for preparing "a syndio-isoblock polymer having molecular

chains in which syndiotactic and isotactic sequences are

present and the sequence length is 3 to 50 monomer units by

polymerization of propylene or an olefin of the formula

RCH=CHR' in which R and R' are identical or different and are

an alkyl radical having 1 to 14 carbon atoms or R and R'

combine with the carbon atoms joining them together to form a

ring"; (2) Claim 36 of Dolle Application 08/147,006 is

directed to the process of Claim 31 for preparing a syndio-

isoblock polymer having molecular chains in which syndiotactic

and isotactic sequences are present and the sequence length is

3 to 50 monomer units by polymerization of an olefin (Claim

31) "wherein said olefin is ethylene or propylene"; and (3)

Claim 37 of Dolle Application 08/147,006 is directed to the

process of Claim 31 "wherein said olefin is a 1-olefin", Ewen

argues, purportedly supported by Dr. Gauthier's declarations

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(RE 29-31; RE 41-43), that persons skilled in the art

immediately would have recognized that Dolle's claims are

directed to impossible processes. Dr. Gauthier declares (RE

29: RE 41):

> It is, in my expert opinion, literally impossible
> to polymerize ethylene to arrive at a syndiotactic
> polyethylene, an isotactic polyethylene, or a polymer
> having isotactic and/or syndiotactic blocks of ethylene.
> One skilled in this art would not know how to polymerize
> ethylene to provide a polymer having syndiotactic and
> isotactic sequences, and as indicated above, it is, in
> my opinion [sic], that this is a chemical impossibility.
> It is, of course, further impossible to characterize
> polyethylene in terms of the Winter Equations . . . .

Dr. Gauthier further declares that it is unclear from Dolle's

specification how to assign or apportion isotacticity and

syndiotacticity to sequences of polymers resulting from the

polymerization of internal olefins or sequences of copolymers

(RE 29-31; RE 41-43).

We find that persons having ordinary skill in the art

would have understood that the terms syndio-isoblock,

syndiotactic, and isotactic are meaningless in the limited

context of homopolymers produced by the polymerization of

ethylene, irrespective of the polymerization catalyst or

polymerization conditions. Ethylene homopolymers *prima facie*

cannot be syndio-isoblock polymers having molecular chains in

which syndiotactic and isotactic sequences are present.

However, it is our view that no persons skilled in the art reasonably would have interpreted the processes Dolle claims as being directed to processes for producing a syndio-isoblock polymer by polymerizing ethylene itself. Accordingly, we conclude that Dolle's claims are not directed to processes for the preparation of polyethylene.

Our interpretation of the language of Dolle's claims is consistent with the interpretation of the scope of the claimed subject matter in In re Angstadt, 537 F.2d 498, 190 USPQ 214 (CCPA 1976). Angstadt's claims were directed to an improved "process for the catalytic oxidation of secondary or tertiary alkylaromatic hydrocarbons of the formula . . . in the presence of air or oxygen at a temperature of from about 80 to 150°C

to form a reaction mixture comprising the corresponding hydroperoxides . . . wherein the catalyst is of the formula $Mx_n(HAPA)_m$ . . . wherein the ratio of said catalyst to said alkylaromatic hydrocarbon is from about 0.1 to 5.0 parts by weight of catalyst per 100 parts by weight of alkylaromatic

hydrocarbon." In re Angstadt, 537 F.2d at 500, 190 USPQ at 216.

Angstadt first instructs at 537 F.2d at 501, 190 USPQ at 217:

> . . . [T]he claim limitation "to form * * *
> hydroperoxides" must be given effect since we _must_ give
> effect to _all_ claim limitations. See _In re Geerdes_,
> 491 F.2d 1260, 180 USPQ 789 (Cust. & Pat. App. 1974); _In
> re   Wilder_, 429 F.2d 447, 57 CCPA 1314, 166 USPQ 545 (1970).

Similarly, we must give effect to the phrase "for the

preparation of a syndio-isoblock polymer having molecular

chains in which syndiotactic and isotactic sequences are

present and the sequence length is 3 to 50 monomer units" as a

functional limitation of Dolle's claims. That is, even if

Dolle's claims could be broadly interpreted to read on

processes for homopolymerizing ethylene or any other

symmetrical olefin without a 1-olefin comonomer, persons

skilled in the art immediately would have understood from

Dolle's disclosure that the processes claimed include only

those processes for producing polymers from olefin monomers

which may be polymerized to form syndio-isoblock polymers

having molecular chains in which syndiotactic and isotactic

sequences are present. "There is nothing intrinsically wrong

in defining something by what it does rather than what it is."

In re Echerd, 471 F.2d 632, 635, 176 USPQ 321, 322-23 (CCPA

1973).

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    The interpretation that Dolle's claims read on impossible

processes of preparing syndio-isoblock polymers having

molecular chains in which syndiotactic and isotactic sequences

are present by polymerizing ethylene itself, for example, the

interpretation Ewen and Dr. Gauthier would have us adopt,

ignores both the general rule that all claim limitations must

be given effect and the teaching of Dolle's specification as a

whole. Dolle's specification teaches, "[t]he invention

relates to a syndio-isoblock polymer having long isotactic and

syndiotactic sequences and to a process for its preparation"

(Dolle Application 08/147,006, Spec., p. 1, l. 1-3).

    On similar facts wherein the process <u>Angstadt</u> claimed

could be read to encompass both operative and inoperative

embodiments, the court concluded, <u>In re Angstadt</u>, 537 F.2d at

504, 190 USPQ at 219 (emphasis added):

    Depriving inventors of claims which adequately protect
    them and limiting them to claims which practically invite
    appropriation of the invention while avoiding
infringement
    inevitably has the effect of suppressing disclosure.
What
    the dissent seems to be obsessed with is the thought of
    catalysts which *won't* work to produce the intended
result.
    . . . Without undue experimentation or effort or expense
<u>the</u>
    <u>combinations which do not work will readily be discovered</u>
    <u>and, of course, nobody will use them and the claims do</u>
    <u>not cover them</u>.

Similarly here, without undue experimentation or effort or
expense, persons having ordinary skill in the art could
readily determine which monomers cannot be used "for the
preparation

of a syndio-isoblock polymer having molecular chains in which
syndiotactic and isotactic sequences are present and the
sequence length is 3 to 50 monomer units" and, of course,
nobody will use them to prepare syndio-isoblock polymers
having molecular chains in which syndiotactic and isotactic
sequences are present, and Dolle's claims do not cover them as
a matter of law. Accord In re Johnson, 558 F.2d 1008, 1016,
194 USPQ 187, 194 (CCPA 1977) ("It is clear that those skilled
in the art would have no trouble ascertaining whether any
particular polymer falls within the scope of . . . [the
claim]").

    Moreover, Ewen has not shown, contrary to the objective
teaching in the specification of Dolle Application 08/147,006
at pages 11-12, bridging para., that syndio-isotactic polymers
having molecular chains in which syndiotactic and isotactic
sequences are present, cannot be prepared by polymerizing an
olefin selected from the group consisting of ethylene,
propylene, and olefins of the formula RCH=CHR' in which R and

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R' are identical or different and are an alkyl radical having

1 to 14 carbon atoms or R and R' combine with the carbon atoms

joining them together to form a ring, <u>at least in the presence</u>

<u>of a comonomer</u>. Accordingly, we are not persuaded by Ewen's

arguments, based on Dr. Gauthier's unsupported opinions, that

certain processes which Dolle claims are incapable of being

used to prepare a syndio-isoblock polymer having molecular

chains in which syndiotactic and isotactic sequences are

present, i.e., are inoperable.

    While we generally agree with Dr. Gauthier's view that

the terms "syndio-isoblock polymer", "syndiotactic and

isotactic sequences", and "sequence length is 3 to 50 monomer

units" are classically defined in reference to stereochemical

configurations of the monomer units of polypropylene and

alpha-polyolefins relative to the planes of their polymeric

chains, skilled artisans have presumed their applicability to

other polyolefins.

For example, see Ewen, U.S. 5,036,034 (Appendix F), column 4,

lines 50-68. Ewen states, "Olefins, especially propylene, may

be polymerized to form polyolefins in various forms:

isotactic, syndiotactic and atactic" (Ewen, U.S. Patent

5,036,034, col. 1, l. 12-14). Ewen et al., U.S. 4,892,851 (EE
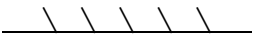
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I), states (Ewen et al., U.S. 4,892,851, col. 1, l. 16-27;

emphasis added):

> The present invention provides a catalyst and
process
>   for <u>polymerizing olefins</u> having three or more carbon
atoms
>   to produce a polymer with a syndiotactic stereochemical
>   configuration. The catalyst and process are particularly
>   useful in polymerizing propylene . . . .
>
>   As known in the art, syndiotactic polymers have a
>   unique stereochemical structure in which monomeric units
>   having enantiomorphic configuration of the asymmetric
carbon
>   atoms follow each other alternately and regularly in the
>   macromolecular main chain.

Ewen et al. depict the structure and define the molecular

units of syndiotactic polymers using general Fischer

projection formulas and NMR nomenclature (Ewen et al., U.S.

4,892,851,

col. 2, l. 9, to col. 3, l. 6).

We find that persons skilled in the art would have

considered broad teachings to polymerize olefins in their

functional context. Ewen defines isotactic polypropylene as

containing "repeating units with identical configurations and

only a few erratic, brief inversions in the chain",

represented by the Fischer projection \ \ \ \ \ and

designated in Bovey's NMR nomenclature as mmmm (Ewen U.S.

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Patent 5,036,034, col. 1, l. 14-25). Ewen defines a

"syndiotactic polymer"

as containing "principally units of exactly alternating

stereoisomers" by the Fischer projection

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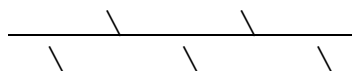
and in Bovey's NMR nomenclature as rrrr (Ewen U.S. Patent

5,036,034, col. 1, l. 34-45). The structure of Ewen's

"hemiisotactic polymers" is represented by Fischer projections

(3)(Ewen U.S. 5,036,034, col. 1, l. 57-65) and (6)(Ewen U.S.

5,036,034, col. 4, l. 23-36) where "[t]he second carbon atom

in formula (6) is the asymmetric carbon atom, i.e., the one

which does not have identical groups attached, hence

'asymmetric'" (Ewen U.S. 5,036,034, col. 2, l. 8-10).

Most pertinent to the meaning persons skilled in the art

would have attributed to the references to ethylene and

propylene as polymerizable monomers for producing polymers

having syndiotactic and isotactic sequences in Dolle's claims

are the corresponding definitions of the terms and list of

monomers   in Ewen's U.S. Patent 4,794,096 (Appendix G), at

column 2,

lines 3-42. In reference to the scope of polymerizable

monomers which persons skilled in the art would consider for

production of polymers classically defined as having

syndiotactic and isotactic sequences, Ewen states (Ewen, U.S.

4,794,096, col. 1, l. 18-43; emphasis added):

> The present invention provides a hafnium
> metallocene catalyst useful in the polymerization
> of olefins, <u>particularly propylene and higher alpha-
> olefins, and in the copolymerization of olefins,
> especially ethylene and propylene</u>.

> . . . . .

> The use of metallocenes as catalysts in the
> <u>copolymerization of ethylene and other alpha-olefins</u>
> is also known in the art. U.S. Pat. No. 4,542,199 to
> Kaminsky, et al. discloses a process for the
polymerization
> of olefins and particularly for the preparation of
> polyethylene and copolymers of polyethylene and other
> alpha-olefins.

As in Ewen's earlier patent disclosures, the

specification of Dolle Application 08/147,006 defines the

claimed processes

of preparing polyolefins in classical terms of the resultant

syndiotactic and isotactic sequences of the polymer produced

and the ethylene and propylene monomers polymerized to form

the product. Persons skilled in the art reasonably would have

interpreted the scope of the subject matter covered by Dolle's

claims in light of Dolle's disclosure and conventional wisdom

in the art. Convention wisdom in the art instructs that

ethylene may only be copolymerized to produce polymers having

isotactic and syndiotactic sequences. To the extent that

Dolle's claims might be broadly interpreted to cover

impossibilities, the broad interpretation would be

inconsistent with conventional knowledge in the art and the

teaching in Dolle's specification as a whole.

We conclude that persons skilled in the art would have

recognized that Dolle's claims do not cover impossibilities.

Syndiotactic and isotactic sequences together with, for

example, ethylene as the olefinic monomer, are to be

interpreted in the context of copolymerization processes.

When polymerizing internal olefinic monomers, syndiotactic and

isotactic sequences are defined relative to the asymmetric

carbon atoms in the polymer prepared. Ewen's arguments and

Dr. Gauthier's view that Dolle's claims read on

impossibilities are unreasonable because they are inconsistent

with the common knowledge and good sense of persons skilled in

the art. Persons having ordinary skill in the art are

presumed to think along the line of conventional wisdom.

Standard Oil Co. v. American Cyanamid Co., 774 F.2d 448, 454,

227 USPQ 293, 298 (Fed. Cir. 1985). Ewen's argument that

persons skilled in the art would have read the words and

phrases of the processes Dolle claims so to read on

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impossibilities "presumes stupidity rather than skill." In re

Sovish, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

Contrary to party Ewen's view, our interpretations of the

meanings of the words and phrases in Dolle's claims, and the

scope of the subject matter encompassed by Dolle's claims,

have been both systematic and sensible. As said in Autogiro

Company of Am. v. United States, 384 F.2d 391, 397, 155 USPQ

697, 702 (Ct. Cl. 1967):

> The necessity for a sensible and systematic
> approach to claim interpretation is axiomatic. The
> Alice-in-Wonderland view that something means whatever
> one chooses it to mean makes for enjoyable reading,
> but bad law.

3.   Ewen's contentions

     A.   Patentability of Dolle Claims 4-6, 8,
          and 12-37 under 35 U.S.C. § 102 or 103

Ewen contends that Claims 4-6, 8, and 12-37 of Dolle

Application 08/147,006 are unpatentable under 35 U.S.C.

§ 102 over, and/or 35 U.S.C. § 103 in view of, Ewen et al.,

U.S. Patent 4,892,851 (EE I), or Ewen et al., "Syndiotactic

Polypropylene Polymerizations with Group IVB Metallocenes,"

JACS, Vol. 110, No. 18, pp. 6255-6256 (1988)(Ewen JACS)(EE

III), and so moves for judgment (Paper No. 18). Ewen's motion

is denied for Claims 4-6, 8, 12-26, and 31-37. However, the

motion is granted in-part for Claims 27-30 (Appendix E).

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     Ewen et al., U.S. 4,892,851, describes metallocene

catalysts which are said to be useful for preparing

syndiotactic polyolefins, particularly polypropylenes, and

processes for the preparation of syndiotactic polyolefins

using the metallocene catalysts. The reference does not

specifically describe a metallocene catalyst which is defined

or encompassed by   Claims 4-6, 8, and 12-37 of Dolle

Application 08/147,006. Moreover, Ewen et al, U.S. 4,892,851

would have led persons having ordinary skill in the art to

believe that all the metallocene compounds therein generically

described are syndiospecific, i.e., are useful exclusively for

preparing polyolefins having syndiotactic stereochemical

structures.

See the teaching of Ewen et al., U.S. 4,892,851 (EE I), at

column 13, line 59, to column 14, line 5 (emphasis added):

> It should be further understood that the
> syndiospecific catalysts of the present invention are
> not limited to the specific structures recited in the
> Examples, but rather, include catalysts described by
> the general formula given herein in which one Cp ring
> is substituted in a substantially different manner so
> as to be sterically different. In the Examples above,
> the rings included an unsubstituted Cp ring and a Cp
> ring substituted to form a fluorenyl radical, but
> similar results are obtainable through the use of other
> ligands consisting of bridged Cp rings in which one of
> the Cp rings is substituted in a substantially different
> manner from the other Cp ring, e.g., an indenyl radical
> and a Cp ring, a tetramethyl substituted Cp ring and a

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> Cp ring, a dialkyl substituted Cp ring and a monoalkyl
> substituted ring, etc.

To the contrary, Ewen, U.S. 5,036,034 (Appendix F),

indicates that hemiisotactic polyolefins are produced when

olefins are polymerized using the metallocene catalysts it

describes, irrespective of the polymerization conditions

(Ewen, U.S. 5,036,034, col. 5, l. 65, to col. 6, l. 3). Dolle

Application 08/147,006 likewise suggests that syndio-isoblock

polymers are produced when olefins are polymerized using

the metallocene catalysts it describes, regardless of the

polymerization conditions (Dolle Application 08/147,006,

spec., p. 10, l. 32, to p. 11, l. 27). Based on Ewen's

disclosure

in U.S. 5,036,034, the APJ found that "no special

polymerization conditions are necessary to form hemiisotactic

polymers" and

"any of the conventional means of polymerization will give a

hemiisotactic structure" when the metallocenes described in

Ewen, U.S. 5,036,034, catalyze the polymerization of olefins

(Paper

No. 52, p. 11, first full para.). Dr. Winter's calculations,

which we found to be consistent with the average sequence

length values for isotactic and syndiotactic sequences

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indicated in each of Examples 3-12 of Dolle Application

08/147,006, confirm that no polymer prepared by a process

specifically described in Ewen et al., U.S. 4,892,851, for

which a pentad distribution from its

C-13 NMR spectra is disclosed, has "molecular chains in which

syndiotactic and isotactic sequences are present" and the

average "sequence length is 3 to 50 monomer units" (RD 4-5).

In short, Ewen et al., U.S. 4,892,851, neither specifically

describes subject matter to which Claims 4-6, 8, 12-26, and

31-37 of Dolle Application 08/147,006 is limited, nor

reasonably would have suggested a process, metallocene

compound, or metallocene catalyst of Dolle Claims 4-6, 8, 12-

26, and 31-37 for use in preparing "syndio-isoblock polymers

having molecular chains in which syndiotactic and isotactic

sequences are present and the sequence length is 3 to 50

monomer units" (Claim 32).

However, Party Ewen argues (Brief Ewen, p. 22, first
para.):

> The aforementioned Ewen et al. JACS article
> (Ewen JACS)(Exhibit D) discloses the same
> isopropylene(cyclopentadienyl)(fluorenyl)hafnium or
> zirconium dichlorides as described above with respect
> to Ewen '851, that is, Structure (20). Ewen JACS adds
> a bit of information with respect to polymer structure
> when it refers to an isotactic/syndiotactic polymer
> having a stereoblock microstructure indicated by the
> icosad -- rrrrrrrmmmmrrrrrrrr-- which in terms of

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the Fischer projection presentation would be
characterized as follows:

$$\diagdown \quad \diagdown \quad \diagdown \quad \diagdown \quad \diagdown\diagdown\diagdown\diagdown \quad \diagdown \quad \diagdown \quad \diagdown \quad \diagdown \quad (23)$$
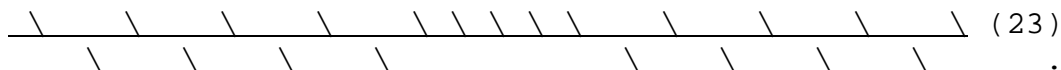
We are not persuaded by the additional structure that

either

Ewen JACS itself or the combined teachings of Ewen JACS and

Ewen et al., U.S. 4,892,851, reasonably would have suggested

an invention encompassed by Claims 4-6, 8, 12-26, and 31-37 of

Dolle Application 08/147,006 to persons having ordinary skill

in the art. The Zr and Hf metallocenes with which Ewen JACS

appears to have polymerized propylene are not metallocene

compounds of Dolle's claims. The cyclopentadienyl and

fluorenyl rings of the metallocenes Ewen JACS employed were

not substituted in at least one "R^3 through R^8" ring position

as Dolle requires for the metallocenes he claims. Next, the

Zr metallocene-produced polymer described at page 6256, column

1, of Ewen JACS has the microstructure --

rrrrrmmrrrrrmrrrrrmmrrrrr--. Third, Ewen JACS explicitly

states (Ewen JACS, p. 6256, col. 1; emphasis added):

> Two percent of the polymer obtained with Hf consists
> of isotactic blocks. The ...rrrrrrrrmmmmmrrrrrrr...
> stereoblock microstructure or the isotactic/syndiotactic
> mixtures are attributed to syndiospecific contact ion
> pairs and associated neutral, isospecific complexes.

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Ewen has not explained how or why the disclosure in Ewen JACS describes subject matter defined by Claims 4-6, 8, 12-26, and 31-37 of Dolle Application 08/147,006, or reasonably would have suggested the subject matter defined by Claims 4-6, 8, 12-26, and 31-37 of Dolle Application 08/147,006 to persons having ordinary skill in the art, either alone or in combination with the teaching of Ewen et al., U.S. 4,892,851.

However, as did the APJ (Paper No. 54, pp. 8-13), we hold that Claims 27-30 (Appendix E) of Dolle Application 08/147,006 are not limited to metallocene compounds and catalysts which are useful exclusively for preparing "syndio-isoblock polymers having molecular chains in which syndiotactic and isotactic sequences are present and the sequence length is 3 to 50 monomer units" (Claim 32). Claims 27-30 are directed to metallocene compounds and catalysts which are unlimited as to their utility, e.g.,

(1) metallocene compounds and catalysts for use in preparing hemiisotactic polymers described in Ewen, U.S. 5,036,034, which are not "syndio-isoblock polymers having molecular chains in which syndiotactic and isotactic sequences are present and the sequence length is 3 to 50 monomer units", or

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(2) metallocene compounds and catalysts for use in preparing

syndiotactic polymers such as those described in Ewen et al.,

U.S. 4,892,851, and/or Ewen JACS, which are not syndio-

isoblock polymers as defined in Claims 4-6, 8, 12-26, and 31-

37 of Dolle Application 08/147,006. Accordingly, we conclude

that the metallocene compounds and catalysts of Claims 27-30

of Dolle Application 08/147,006 would have been _prima facie_

obvious to persons having ordinary skill in the art under 35

U.S.C. § 103 for use in preparing syndiotactic polymers in

view of the syndiospecific catalysts generically described in

Ewen et al., U.S. 4,892,851, particularly those generically

disclosed at column 13, line 59, to column 14, line 5,

thereof.

A _prima facie_ case of unpatentability of the metallocene

compounds and catalysts of Claims 27-30 of Dolle Application

08/147,006 under 35 U.S.C. § 103 having been established in

view of the teaching of Ewen et al., U.S. 4,892,851, the

burden shifted to Dolle to provide evidence of patentability,

e.g.,

an unexpected result commensurate in scope with the claimed

subject matter. Dolle has not shown that metallocene

compounds and catalysts commensurate in scope with those

defined in

Claims 27-30 cannot be used to prepare hemiisotactic polymers

outside the scope of "syndio-isoblock polymers having

molecular chains in which syndiotactic and isotactic sequences

are present and the sequence length is 3 to 50 monomer units"

or syndiotactic polymers of Ewen et al., U.S. 4,892,851, which

Dr. Scott argues would inherently include a substantial number

of the isotactic "mistakes" (RE 5-6, bridging para.).

B.   Patentability of Dolle Claims 4-6, 8, 12-26, 28
     and 30-37 under 35 U.S.C. § 112, 1st and 2nd para.

Consistent with the APJ's findings (Paper No. 60) and our

interpretation hereinabove of the scope of the subject matter

Dolle claims, we find that Dolle's claims particularly point

out and distinctly claim the subject matter which Dolle

regards as his invention in the manner required by the second

paragraph of 35 U.S.C. § 112. Given our interpretation of the

scope of the subject matter which persons having ordinary

skill in the art reasonably would have understood Dolle's

claims to cover in light of Dolle's specification, prosecution

history, and the knowledge in the art at the time, we hold

that Claims 4-6, 8, 12-26, 28

and 30-37 of Dolle Application 08/147,006 are directed to

subject matter which (1) would have been enabled by its

supporting specification as required by 35 U.S.C. § 112,

first paragraph, and (2) is patentable under 35 U.S.C. § 101.

Party Ewen has the initial burden to support his motion

for judgment under 37 CFR § 1.633(a)(Paper No. 18). Ewen

argues that Dolle's claims are unpatentable for essentially

three reasons. First, even assuming that the terms and

phrases

used in Dolle's claims would have been considered in light of

Dolle's specification and the prosecution history, Ewen argues

that the terms and phrases are so indefinite and

unconventionally utilized that persons having ordinary skill

in the art purportedly would not have understood and could not

have readily determined the metes and bounds of the subject

matter Dolle claims so to satisfy the requirements of the

second paragraph

of 35 U.S.C. § 112. Second, Ewen argues that the process

step "used to make" is improper under 35 U.S.C. § 112, second

paragraph, as a further limitation of the compounds and

catalysts claimed. Third, because Dolle's claims purportedly

include impossibilities, Ewen argues that Dolle's

specification could not have enabled persons skilled in the

art to make and use the full scope of the subject matter claimed as required under 35 U.S.C. § 112, first paragraph.

37 CFR § 1.637(a) states, "A party filing a motion has the [initial] burden of proof to show that it is entitled to the relief sought in the motion." Ewen has not met his burden to establish that Dolle's claims are unpatentable under either 35 U.S.C. § 112, second paragraph, 35 U.S.C. § 112, first paragraph, or 35 U.S.C. § 101. Consistent with the APJ's rulings (Paper No. 60, p. 9, first para.), we have interpreted the phrase "sequence length" in light of Dolle's specification and prosecution history to mean the average length of the sequences of the polymers. The evidence shows that (1) the term "sequence length" is well known in the art; (2) persons having ordinary skill in the art reasonably would have understood the term "sequence length" to mean the average sequence length of the sequences of the polymers in light of Dolle's specification, including Dolle's examples; (3) persons skilled in the art reasonably would have understood that average sequence length can be accurately calculated based on a triad analysis of the pentad distribution data from C-13 NMR spectra by use of formulas known to persons having ordinary

skill in the art; and (4) persons skilled in the art could

have verified their calculations of

the average sequence lengths of the syndiotactic and isotactic

sequences of any new polyolefin and the relationship of their

polyolefin to the syndio-isoblock polymers defined in Dolle

claims by reference to the C-13 NMR pentad data and average

sequence lengths that Dolle provides for the syndiotactic and

isotactic sequences of polymers prepared in accordance with

his examples. Considering all the evidence before us, it is

our view that Ewen has not met its burden to establish that

Dolle's claims which include references to "sequence length"

are so vague and indefinite that persons having ordinary skill

in the art reasonably would not have understood, or could not

have readily determined, the metes and bounds of the subject

matter claimed in the manner required by the second paragraph

of 35 U.S.C. § 112.

Nor has Ewen satisfactorily explained why persons having

ordinary skill in the art otherwise reasonably would have been

confused by art-recognized claim terminology, reasonably would

have interpreted the language of Dolle's claims in a manner

inconsistent with Dolle supporting specification, prosecution

history, and knowledge in the art, reasonably would have

interpreted the language with which Dolle defines the subject

matter claimed so to include impossibilities, and/or

reasonably would have construed what appears to be functional

language in a manner entirely inconsistent with the demands of

35 U.S.C. § 112,

second paragraph, 35 U.S.C. § 101, and the common sense for

which persons having ordinary skill in the art have been

recognized. Because Ewen's reading of the words and phrases

in Dolle's claims is inconsistent with a fair reading of

Dolle's specification, prosecution history, art-recognized

definitions, and common sense, we must deny Ewen's motion for

judgment of Dolle's claims unpatentable under the second

paragraph of 35 U.S.C. § 112. Given our interpretation of the

scope of the subject matter claimed, we must also deny Ewen's

motions for judgment that the subject matter Dolle claims is

unpatentable under either the first paragraph of 35 U.S.C. §

112 or 35 U.S.C. § 101.

    C.   Ewen's Motion for Benefit of the July 15,
          1988, filing date of Application 07/220,007,
          now U.S. Patent 4,892,851

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Ewen moved (Paper No. 22) to be accorded benefit of the

July 15, 1988, filing date of Application 07/220,007, which

issued January 9, 1990, as U.S. Patent 4,892,851 (EE I). The

APJ denied Ewen's motion (Paper No. 61). Citing the legal

standard espoused in Weil v. Fritz, 572 F.2d 856, 865-66 n.16,

196 USPQ 600, 608 n.16 (CCPA 1978); Fiers v. Revel, 984 F.2d

1164, 1170, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993); and Hyatt

v. Boone,

146 F.3d 1348, 1352, 47 USPQ2d 1128, 1130 (Fed. Cir. 1998);

the APJ held that benefit of an earlier application for

purposes of priority requires that the proposed benefit

application satisfy the written description and enablement

requirements of the first paragraph of 35 U.S.C. § 112 for at

least one embodiment within the scope of the interference

count (Paper No. 61, p. 2). The APJ found (Paper No. 61, pp.

2-3):

> The Ewen 851 specification does not provide a written
> description of an embodiment falling within count 2.
> In particular, Ewen 851 does not describe (1) the
> formation of either syndio-isoblock polymer having
> molecular chains in which syndiotactic and isotactic
> sequences are present and the sequence length is 3
> to 50 monomer units or hemiisotactic olefin polymer
> or (2) a metallocene compound meeting the requisites
> of the count.

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Party Ewen does not allege that the APJ applied the wrong

legal standard. Rather, Ewen argues that Ewen et al.,

Application 07/220,007 (hereafter Ewen et al., U.S. Patent

4,892,851), does

in fact provide a written description of (1) the formation of

either a syndio-isoblock polymer having molecular chains in

which syndiotactic and isotactic sequences are present and the

sequence length is 3 to 50 monomer units or a hemiisotactic

olefin polymer, and/or (2) a metallocene compound defined by

the count, as required by the first paragraph of 35 U.S.C. §

112 (Ewen Brief, pp. 46-52).

Based primarily on the testimony of Dr. Scott (RE 1-9),

Ewen proffers "one possibility" that the syndio-isoblock

polymer having molecular chains in which syndiotactic and

isotactic sequences are present and the sequence length is 3

to 50 monomer units defined by Count 2 reads on "a

syndiotactic polymer having site control mistakes which

results [sic] in isotactic sequences of three monomer units"

(Ewen Brief, p. 48). We hereinabove interpreted the same

language in Dolle's claims which correspond to Count 2 as

<u>excluding</u> known syndiotactic, highly isotactic, or isotactic-

stereoblock polymers having site control mistakes of three

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monomer units. Thus, we found that the evidence submitted in this interference as a whole supported a more limited interpretation of Dolle's claim language.

The description requirement of the first paragraph of 35 U.S.C. § 112 cannot be satisfied by the mere possibility that a process for polymerizing olefins which is generically described in Ewen et al., U.S. Patent 4,892,851, for production of syndiotactic polymers, and may employ any one of a generically described group of metallocene compounds including metallocenes of formula I of Count 2, might inherently produce a syndio-isoblock polymer having molecular chains in which syndiotactic and isotactic sequences are present and the sequence length is 3 to 50 monomer units, especially given our interpretation of the meaning of the terms and phrases Dolle uses in his claims to define a syndio-isoblock polymer. As said in Langer v. Kaufman, 465 F.2d 915, 918, 175 USPQ 172, 174 (CCPA 1972):

> To prove inherency, the burden is on appellants to
> show that the "necessary and only reasonable construction
> to be given the disclosure by one skilled in the art
> is one which will lend clear support to each positive
> limitation . . . ." Binstead v. Littman, 242 F.2d 766,
> 770, [113 USPQ 279, 282] 44 CCPA 839, 844(1957).

Accord Kennecott Corp. v. Kyocera Int'l, Inc., 835 F.2d 1419, 1423, 5 USPQ2d 1194, 1198 (Fed. Cir. 1987); Snitzer v. Etzel,

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531 F.2d 1062, 1067, 189 USPQ 415, 419 (CCPA 1976); Wagoner v.

Barger, 463 F.2d 1377, 1380, 175 USPQ 85, 86-87 (CCPA 1972);

Storcheim v. Daugherty, 410 F.2d 1393, 1396, 161 USPQ 679, 682

(CCPA 1969); In re Filstrup, 251 F.2d 850, 853, 116 USPQ 440,

442 (CCPA 1958). We previously found, and here repeat our

finding, that no polymer produced by a process exemplified in

Ewen et al., U.S. Patent 4,892,851, for which the pentad

distribution data from C-13 NMR spectrum is reported, is a

syndio-isoblock polymer having molecular chains in which

syndiotactic and isotactic sequences are present and the

average sequence length is 3 to 50 monomer units, as we

interpret that language in the context of Dolle's claims in

light of Dolle's specification.

    While we find that the formulas of the metallocene

compounds Ewen et al., U.S. Patent 4,892,851 (EE I), suggest

for use in preparing the syndiotactic polyolefins they

generically describe certainly encompass metallocenes defined

in Count 2 (see Ewen

et al., U.S. Patent 4,892,851 (EE I), col. 3, l. 19-35; col.

4, l. 48, to col. 5, l. 12; and col. 13, l. 59, to col. 14, l.

5), we find no evidence whatsoever in the patent disclosure

that any of the metallocenes therein generically described

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could successfully be used to catalyze polymerization of an

olefin or olefins to produce a syndio-isoblock polymer having

molecular chains in which syndiotactic and isotactic sequences

are present and the average sequence length is 3 to 50 monomer

units, as we interpret the language of Count 2 of this

interference and interpreted the corresponding language in

Dolle's claims in light of his specification. Count 2 of this

interference is directed only to those metallocene compounds

and catalysts, and processes of polymerizing olefins using

only those metallocene compounds and catalysts, which produce

syndio-isoblock polymers having molecular chains in which

syndiotactic and isotactic sequences are present and the

average sequence length of the syndiotactic and isotactic

sequences present is 3 to 50 monomer units.

We find that Ewen et al., U.S. Patent 4,892,851, does not

describe a single embodiment of Count 2 in the manner required

for Party Ewen to be accorded benefit of the July 15, 1988,

filing date of Application 07/220,007 from which U.S. Patent

4,892,851 issued.

However, Count 2 of this interference is alternatively

directed to those metallocene compounds and catalysts, and

processes of polymerizing olefins using those metallocene

compounds and catalysts, which produce "hemiisotactic olefin polymers" under all reaction conditions. To be accorded benefit of its July 15, 1988, Party Ewen must establish that Ewen et al., U.S. Patent 4,892,851, provides a written description of any embodiment of the invention of Count 2 in the manner required by 35 U.S.C. § 112, first paragraph. Because the arguments presented in Party Ewen's brief (Ewen Brief, pp. 46-52) in support of its motion for benefit of the July 15, 1988, filing date of Application 07/220,007 from which U.S. Patent 4,892,851 issued, are limited to the prior application's purported written description of a syndio- isoblock polymer having molecular chains in which syndiotactic and isotactic sequences are present and the sequence length is 3 to 50 monomer units, a polymer we find to be much narrower in scope than a "hemiisotactic olefin polymer", we might properly deny Ewen's motion without considering whether Application 07/220,007, from which U.S. Patent 4,892,851 issued, provides a written description of a "hemiisotactic olefin polymer". Nevertheless, we shall consider the alternative question because, in our view, it buttresses our finding that the syndiotactic polymers described in Application 07/220,007, from which U.S. Patent 4,892,851

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issued, are not syndio-isoblock polymers having molecular

chains in which syndiotactic and isotactic sequences are

present and the sequence length is

3 to 50 monomer units.

Hereinabove, we defined a "hemiisotactic polyolefin"

generally as having one or more of the following

configurations:
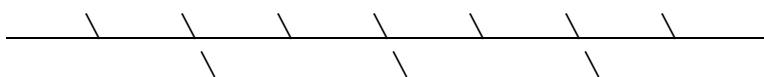
Hemiisotactic polyolefin

wherein each _ is a radical $-(CH_2)_n-CH_3$, where n is 0 or an

integer, which is randomly positioned on either one side of

the polymer plane or the other (Ewen Brief, p. 4; Ewen, U.S.

Patent 5,036,034, col. 1, l. 52, to col. 2, l. 22, and col. 4,

l. 15-38). Based on the above definition itself, it might

appear that persons having ordinary skill in the art *prima*

facie would have understood that all syndiotactic polymers are

hemiisotactic polymers, each of whose specific stereostructure

varies with the syndiospecificity of the metallocene catalyst.

To the contrary, based on all the evidence in this

interference, we find that the hemiisotactic polymers of Ewen,

U.S. Patent 5,036,034, are not generic to the syndiotactic

polymers described in Ewen et al., U.S. Patent 4,892,851,

whether or not the syndiotactic polymers inherently include

occasional mistakes of three monomer units, and further

conclude that persons skilled in the art immediately would

have understood that the syndiotactic polymers the prior art

describes are not hemiisotactic polymers.

We find that the syndiotactic polymer-producing

metallocene catalysts described in Ewen et al., U.S. Patent

4,892,851, cannot be hemiisotactic polymer-producing

metallocene catalysts of the type described in Ewen, U.S.

Patent 5,036,034. Ewen et al., U.S. 4,892,851, relates at

column 12, lines 29-37 (emphasis added):

> The data shown in Tables 1-4 and in FIGS. **2**
> and **3** show that the catalysts of the present invention
> produce <u>a predominantly syndiotactic polymer that
> has high crystallinity</u> and a novel microstructure.
> Particularly, the NMR data shown in Tables 3 and 4
> establish that the xylene insoluble fraction consists
> of a very high percentage of syndiotactic polymer with
> very little, if any, isotactic polymer being produced.

At column 13, line 67, to column 14, line 5, of U.S. Patent

4,892,851, Ewen et al. indicate that (emphasis added):

> . . . <u>similar results are obtainable through the use of
> other ligands</u> consisting of bridged Cp rings in which one
> of the Cp rings is substituted in a substantially
different
> manner from the other Cp ring, e.g., an indenyl radical
> and a Cp ring, a tetramethyl substituted Cp ring and a
> Cp ring, a dialkyl substituted Cp ring and a monoalkyl

substituted ring, etc.

On the other hand, Ewen, U.S. Patent 5,036,034, repeatedly

teaches that hemiisotactic olefin polymers are

"noncrystalline". Ewen, U.S. Patent 5,036,034, states (col.

2, l. 18-22; emphasis added):

    When R_S groups are on the same side of the principal
polymer
    chain, the structure is isotactic. Since only every
other
    one conforms to the isotactic structure, it is "hemi".
The
    <u>material is a noncrystalline polymer</u>.

Ewen expressly states, "Hemiisotactic polypropylene is

<u>noncrystalline</u> due to the disorder and irregularity of these

random groups" (Ewen, U.S. Patent 5,036,034, col. 4, l. 36-38;

emphasis added). "The <u>noncrystalline</u> hemiisotactic

polypropylene has use as a plasticizer for syndiotactic or

isotactic polypropylene" (Ewen, U.S. Patent 5,036,034, col. 6,

l. 4-6; emphasis added). "Hemiisotactic polypropylene is

<u>noncrystalline</u> and can be used as a plasticizer with

syndiotactic and isotactic polypropylene" (Ewen, U.S. Patent

5,036,034, col. 9, l. 30-32; emphasis added). Most generally,

Ewen states, "<u>Hemiisotactic polymer is noncrystalline</u> and with

its partial stereoregular structure would have properties of a

plasticizer" (Ewen, U.S. Patent 5,036,034, col. 6, l. 17-19;

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emphasis added). Similarly, Dolle states (Dolle Application

08/147,006, spec., p. 12,

l. 29-32; emphasis added):

> Owing to this steric structure, <u>the syndio-isoblock</u>
> <u>polymers</u> according to the invention <u>are amorphous or</u>
> <u>partly crystalline</u> depending on the molecular weight
> and on the syndiotactic and isotactic sequence length.

Party Ewen has not explained why the highly crystalline

syndiotactic polymers described in Ewen et al, U.S. Patent

4,892,851, and processes and/or metallocene catalysts useful

for producing the highly crystalline syndiotactic polymers

described in Ewen et al, U.S. Patent 4,892,851, describe

either an amorphous or partly crystalline syndio-isoblock

polymer described in Dolle Application 08/147,006, a process

and/or metallocene catalyst useful for producing an amorphous

or partly crystalline syndio-isoblock polymer described in

Dolle Application 08/147,006, a noncrystalline hemiisotactic

polymer described in Ewen, U.S. Patent 5,036,034, or a process

and/or metallocene catalyst useful for producing a

noncrystalline hemiisotactic polymer described in Ewen, U.S.

Patent 5,036,034. Accordingly, we must deny Party Ewen's

motion (Paper No. 22) to be accorded benefit of the July 15,

1988, filing date of Application 07/220,007, which issued

January 9, 1990, as U.S. Patent 4,892,851.

4.   Dolle's contentions

Consistent with the above, we find that the highly
crystalline syndiotactic polymers described in Ewen et al,
U.S. 4,892,851, and processes and/or metallocene catalysts
useful for producing the highly crystalline syndiotactic
polymers described in Ewen et al, U.S. 4,892,851, do not
describe an amorphous or a partly crystalline syndio-isoblock
polymer described in Dolle Application 08/147,006, a process
and/or metallocene catalyst useful for producing an amorphous
or partly crystalline syndio-isoblock polymer described in
Dolle Application 08/147,006, a noncrystalline hemiisotactic
polymer described in Ewen, U.S. Patent 5,036,034, or a process
and/or metallocene catalyst useful for producing a
noncrystalline hemiisotactic polymer described in Ewen, U.S.
Patent 5,036,034. Moreover, we conclude that Ewen et al, U.S.
Patent 4,892,851, would not have suggested an invention
claimed in either Dolle Application 08/147,006 or Ewen, U.S.
Patent 5,036,034, to persons having ordinary skill in the art.
 To the contrary, Ewen et al, U.S. Patent 4,892,851, describe
processes and metallocene catalysts useful for producing
highly crystalline syndiotactic polyolefins. While Ewen et
al.,

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U.S. Patent 4,892,851, reasonably would have suggested that metallocene catalysts of the same general formula "in which one Cp ring is substituted in a substantially different manner so as to be sterically different" (Ewen et al., U.S. Patent 4,892,851, col. 13, l. 63-65) would be useful for preparing highly crystalline syndiotactic polyolefins, the same disclosure reasonably would have led persons having ordinary skill in the art to expect "similar results" (Ewen et al., U.S. Patent 4,892,851, col. 13, l. 67) as those achieved using the unsubstituted metallocene catalysts Ewen et al. exemplified when using a substituted metallocene catalyst of the same general formula "in which one Cp ring is substituted in a substantially different manner so as to be sterically different" (Ewen et al., U.S. Patent 4,892,851, col. 13, l. 59, to col. 14, l. 5). To the contrary, both Dolle Application 08/147,006 and Ewen, U.S. Patent 5,036,034, describe metallocene catalysts useful for production of amorphous or partly crystalline syndio-isoblock and noncrystalline hemiisotactic polymers. Ewen has not shown that the subject matter Dolle claims, and Dolle has not shown that the subject matter Ewen claims, would have been obvious to a person having ordinary skill in the art under 35 U.S.C. §

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103 in view of the teaching of Ewen et al., U.S. Patent 4,892,851.[9]

Disposition of Interference 103,482

Neither party has submitted priority proofs. Therefore, this interference is decided based on the preliminary motions filed by the parties. Accordingly:

For Interference 103,482, it is

ORDERED that judgment on priority as to Count 2, the sole count in this interference, is awarded against junior party JOHN A. EWEN;

FURTHER ORDERED that judgment on priority as to Count 2 is awarded in favor of senior party VOLKER DOLLE, JURGEN ROHRMANN, ANDREAS WINTER, MARTIN ANTBERG and ROBERT KLEIN;

FURTHER ORDERED that, on the record before the Board of Patent Appeals and Interferences, senior party VOLKER DOLLE, JURGEN ROHRMANN, ANDREAS WINTER, MARTIN ANTBERG and ROBERT

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[9]   On June 30, 1999, Dolle filed Motion Under 1.635 To Suppress Evidence (Paper No. 98), specifically the Declaration of William J. Gauthier, dated September 28, 1998 (EE X); the Second Declaration of William J. Gauthier, dated November 19, 1998 (EE Y); and Randall, James, Polymer Sequence Determination Carbon-13 NMR Method, New York, pp. 1-7 and 29-58 (1977)(EE Z), and all references thereto in Ewen's briefs. Dolle's motion to suppress is moot based on the views expressed in our opinion beginning at page 54.

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KLEIN is entitled to a patent containing Claims 4-6, 8, 12-26, and 31-37 (corresponding to Count 2 of this interference) of Dolle Application 08/147,006, filed November 1, 1993;

FURTHER ORDERED that, on the record before the Board of Patent Appeals and Interferences, senior party VOLKER DOLLE, JURGEN ROHRMANN, ANDREAS WINTER, MARTIN ANTBERG and ROBERT KLEIN is not entitled to a patent containing Claims 27-30 (corresponding to Count 2 of this interference) of Dolle Application 08/147,006, filed November 1, 1993;

FURTHER ORDERED that, on the record before the Board of Patent Appeals and Interferences, junior party JOHN A. EWEN is not entitled to a patent containing Claims 1-8 (corresponding to Count 2 of this interference) of Ewen Application 07/419,221, filed October 10, 1989, issued July 30, 1991, as U.S. Patent 5,036,034; and

FURTHER ORDERED that, on the record before the Board of Patent Appeals and Interferences, junior party JOHN A. EWEN is not entitled to a patent containing Claims 1-28 (corresponding to Count 2 of this interference) of Ewen Application 08/489,800, filed June 12, 1995, for reissue of

Interference 103,482

Ewen Application 07/419,221, filed October 10, 1989, first

issued July 30, 1991, as U.S. Patent 5,036,034.

It is

ORDERED that if there is a settlement and it has not

already been filed, attention is directed to 35 U.S.C. §

135(c) and

37 CFR § 1.661; and

FURTHER ORDERED that a copy of this decision be given an

appropriate paper number and entered into the file records of

Dolle Application 08/147,006, U.S. Patent 5,036,034, and Ewen

Application 08/489,800.

RICHARD E. SCHAFER   )
Administrative Patent Judge)
)
)
)
TEDDY S. GRON   ) BOARD OF PATENT
Administrative Patent Judge)   APPEALS AND
) INTERFERENCES
)
)
JAMESON LEE   )
Administrative Patent Judge)

cc:

Interference 103,482

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Interference 103,482

APPENDICES

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Appendix A: Original Count 1 of Interference 103,482

Appendix B: Miya et al., U.S. Patent 4,931,417,
                     patented June 5, 1990
                     (application filed November 2, 1988)

Appendix C: Substitute Count 2 of Interference 103,482

Appendix D: Amended Claims 4, 16, 19, and 31-37 (Paper No.
64)

Appendix E: Claims 27-30 (Paper No. 53)

Appendix F: Ewen, U.S. Patent 5,036,034,
                     patented July 30, 1991
                     (application filed October 10, 1989)

Appendix G: Ewen, U.S. Patent 4,794,096,
                     patented December 27, 1988
                     (application filed September 11, 1987)

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APPENDIX C

Count 2

A metallocene compound used to make a catalyst to produce (1) hemiisotactic olefin polymers or (2) syndio-isoblock polymers having molecular chains in which syndiotactic and isotactic sequences are present and the sequence length is 3 to 50 monomer units comprising the general formula:

$$R''(CpR''_n)(CpR'_m)MHal_2$$

where Cp is cyclopentadienyl or a substituted cyclopentadienyl, each R and R' is a hydrocarbyl radical having from 1-20 carbon atoms and is the same or different and is selected such that CpR'_m is a sterically different ring from CpR''_n resulting in a lack of bi-lateral symmetry for the compound, M is a Group 3, Group 4, Group 5 or Group 6 metal, n is from 0 to 4, m is from 0 to 4 and Hal is a halogen;

or

a metallocene catalyst comprising:

a) a metallocene compound; and

b) an ionizing agent, wherein the metallocene compound comprises the general formula:

$$R''(CpR''_n)(CpR'_m)MHal_2$$

where Cp is cyclopentadienyl or a substituted cyclopentadienyl, each R and R' is a hydrocarbyl radical having from 1-20 carbon atoms and is the same or different and is selected such that CpR'_m is a sterically different ring from CpR''_n resulting in a lack of bi-lateral symmetry for the compound, M is a Group 3, Group 4, Group 5 or Group 6 metal, n is from 0 to 4, m is from 0 to 4 and Hal is a halogen and wherein the ionizing agent converts a neutral metallocene compound to a metallocene cation which operates as a catalyst to produce (1) hemiisotactic olefin polymers or (2) syndio-isoblock polymer having molecular chains of

(I)

[Structure of formula (I): a fluorene-derived metallocene ligand bearing substituents R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8, R_9 and M_1]
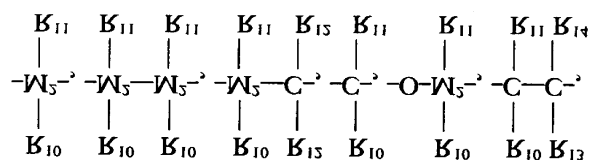
aluminoxane, wherein the metallocene is a compound of the formula I

suspension or in the gas phase, in the presence of a catalyst composed of a metallocene and an

together to for a ring at a temperature of -60 to $100{}_{\circ}C$, a pressure of 0.5 to 100 bar, in solution, in

radical having 1 to 14 carbon atoms or R and R, combine with the carbon atoms joining them

formula RCH = CHR, in which R and R, are identical or different and are hydrogen or an alkyl

or (2) hemiisotactic olefin polymers, comprising polymerization of propylene or a 1-olefin of the

syndiotactic and isotactic sequences are present and the sequence length is 3 to 50 monomer units;

or

a process, for the preparation of (I) a syndio-isoblock polymer having molecular chains in which

monomer units;

in which syndiotactic and isotactic sequences are present and the sequence length is 3 to 50

in which

M₁ is titanium, zirconium, hafnium, vanadium, niobium or tantalum,

R₁ and R₂ are identical or different and are a hydrogen atom, a halogen atom,

C₂-C₁₀-alkenyl, C₆-C₁₀-aryl, C₆-C₁₀-aryloxy, C₁-C₁₀-alkoxy, C₁-C₁₀-alkyl,

C₇-C₄₀-arylalkyl, C₇-C₄₀-alkylaryl or C₈-C₄₀-arylalkenyl,

R₃, R₄, R₅, R₆, R₇ and R₈ are identical or different and are a hydrogen atom, a halogen

C₇-C₄₀-arylalkyl, C₇-C₄₀-alkylaryl or C₈-C₄₀-arylalkenyl, with the proviso that at least

one of the substituents R₃ through R₈ is not hydrogen,

R₉ is

$$
\begin{array}{cccccccc}
R_{11} & R_{11}\ R_{11} & R_{11}\ R_{12} & R_{11} & & R_{11} & R_{11}\ R_{14} \\
| & |\ \ \ \ | & |\ \ \ \ | & | & & | & |\ \ \ \ | \\
-M_2-, & -M_2\!\!-\!\!M_2-, & -M_2\!\!-\!\!C-, & -C-, & -O\!\!-\!\!M_2-, & -C\!\!-\!\!C-, \\
| & |\ \ \ \ | & |\ \ \ \ | & | & & | & |\ \ \ \ | \\
R_{10} & R_{10}\ R_{10} & R_{10}\ R_{12} & R_{10} & & R_{10} & R_{10}\ R_{13}
\end{array}
$$

=BR₁₀, =AlR₁₀, -Ge-, -Sn-, -O-, -S-, =SO, =SO₂, =NR₁₀, =CO, =PR₁₀, OR =P(O)R₁₀,

where R₁₀, R₁₁, R₁₂, R₁₃, and R₁₄ are identical or different and are a hydrogen atom,

a halogen atom, C₁-C₁₀-alkyl, C₁-C₁₀-fluoroalkyl, C₁-C₁₀-alkoxy, C₆-C₁₀-fluoroaryl,

C₆-C₁₀-aryl, C₂-C₁₀-alkenyl, C₇-C₄₀-arylalkyl, C₇-C₄₀-alkylaryl or C₈-C₄₀-arylalkenyl,

or R₁₀ and R₁₁, or R₁₀ and R₁₂, together in each case with the atoms joining them,

form a ring, and

M₂ is silicon, germanium or tin.